

**Area Management Report for the Sport Fisheries of
Southeast Alaska, 2000**

by

Paul M. Suchanek,

Stephen H. Hoffman,

Robert E. Chadwick,

Dean E. Beers,

Thomas E. Brookover,

Mark W. Schwan,

Randolph P. Ericksen,

Robert E. Johnson,

Brian J. Glynn, and

Brian J. Frenette

April 2002

Alaska Department of Fish and Game

Division of Sport Fish



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used in Division of Sport Fish Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications without definition. All others must be defined in the text at first mention, as well as in the titles or footnotes of tables and in figures or figure captions.

Weights and measures (metric)		General		Mathematics, statistics, fisheries	
Centimeter	cm	All commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.	alternate hypothesis	H_A
Deciliter	dL	All commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
Gram	g	and	&	catch per unit effort	CPUE
Hectare	ha	at	@	coefficient of variation	CV
Kilogram	kg	Compass directions:		common test statistics	F, t, χ^2 , etc.
Kilometer	km			confidence interval	C.I.
liter	L			correlation coefficient	R (multiple)
meter	m	east	E	correlation coefficient	r (simple)
metric ton	mt	north	N	covariance	cov
milliliter	ml	south	S	degree (angular or temperature)	°
millimeter	mm	west	W	degrees of freedom	df
		Copyright	©	divided by	÷ or / (in equations)
		Corporate suffixes:		equals	=
		Company	Co.	expected value	E
		Corporation	Corp.	fork length	FL
		Incorporated	Inc.	greater than	>
		Limited	Ltd.	greater than or equal to	≥
		et alii (and other people)	et al.	harvest per unit effort	HPUE
		et cetera (and so forth)	etc.	less than	<
		exempli gratia (for example)	e.g.,	less than or equal to	≤
		id est (that is)	i.e.,	logarithm (natural)	ln
		latitude or longitude	lat. or long.	logarithm (base 10)	log
		monetary symbols (U.S.)	\$, ¢	logarithm (specify base)	log ₂ etc.
		months (tables and figures): first three letters	Jan,...,Dec	mid-eye-to-fork	MEF
		number (before a number)	# (e.g., #10)	minute (angular)	'
		pounds (after a number)	# (e.g., 10#)	multiplied by	x
		registered trademark	®	not significant	NS
		trademark	™	null hypothesis	H_0
		United States (adjective)	U.S.	percent	%
		United States of America (noun)	USA	probability	P
		U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)	probability of a type I error (rejection of the null hypothesis when true)	α
				probability of a type II error (acceptance of the null hypothesis when false)	β
				second (angular)	"
				standard deviation	SD
				standard error	SE
				standard length	SL
				total length	TL
				variance	Var
Weights and measures (English)					
cubic feet per second	ft ³ /s				
foot	ft				
gallon	gal				
inch	in				
mile	mi				
ounce	oz				
pound	lb				
quart	qt				
yard	yd				
Spell out acre and ton.					
Time and temperature					
day	d				
degrees Celsius	°C				
degrees Fahrenheit	°F				
hour (spell out for 24-hour clock)	h				
minute	min				
second	s				
Spell out year, month, and week.					
Physics and chemistry					
all atomic symbols					
alternating current	AC				
ampere	A				
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

FISHERY MANAGEMENT REPORT NO. 02-04

**AREA MANAGEMENT REPORT FOR THE SPORT FISHERIES OF
SOUTHEAST ALASKA, 2000**

by

Paul M. Suchanek
Stephen H. Hoffman
Robert E. Chadwick
Dean E. Beers
Thomas E. Brookover
Mark W. Schwan
Randolph P. Ericksen
Robert E. Johnson
Brian J. Glynn and
Brian J. Frenette

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska 99518-1599

April 2002

The Fishery Management Reports series was established in 1989 for the publication of an overview of Division of Sport Fish management activities and goals in a specific geographic area. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: <http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm> This publication has undergone regional peer review.

Paul M. Suchanek, Mark W. Schwan, Brian J. Glynn, and Brian J. Frenette
Alaska Department of Fish and Game, Division of Sport Fish
P. O. Box 240020, Douglas, AK 99824-0020, USA

Stephen H. Hoffman
Alaska Department of Fish and Game, Division of Sport Fish
2030 Sea Level Drive, Suite 205, Ketchikan, AK 99901, USA

Robert E. Chadwick
Alaska Department of Fish and Game, Division of Sport Fish
P. O. Box 682, Craig, AK 99921, USA

Dean E. Beers
Alaska Department of Fish and Game, Division of Sport Fish
P. O. Box 667, Petersburg, AK 99833-0667, USA

Thomas E. Brookover
Alaska Department of Fish and Game, Division of Sport Fish
304 Lake Street, Room 103, Sitka, AK 99835-7563, USA

Randolph P. Ericksen
Alaska Department of Fish and Game, Division of Sport Fish
P. O. Box 330, Haines, AK 99827-0330, USA

Robert E. Johnson
Alaska Department of Fish and Game, Division of Sport Fish
P. O. Box 49, Yakutat, AK 99689-0049, USA

This document should be cited as:

Suchanek, P. M., S. H. Hoffman, R. E. Chadwick, D. E. Beers, T. E. Brookover, M. W. Schwan, R. P. Ericksen, R. E. Johnson, B. J. Glynn, and B. J. Frenette. 2002. Area management report for the sport fisheries of Southeast Alaska, 2000. Alaska Department of Fish and Game, Fishery Management Report No. 02-04, Anchorage.

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (FAX) 907-465-2440.

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	iv
LIST OF FIGURES	v
ABSTRACT	1
INTRODUCTION	1
MANAGEMENT AREAS	1
SPORT FISHERIES	3
Effort.....	3
Harvest or Total Catch of Important Species	3
REGIONWIDE ACTIONS AND ISSUES	6
Alaska Board of Fisheries Actions.....	6
Chinook Salmon	6
Lingcod.....	6
Trout.....	7
Shellfish.....	7
Chinook Salmon Management.....	7
Preseason Management	7
Terminal Harvest Area Management.....	8
Lingcod Management	8
Prohibition on Heading or Filleting of Salmon.....	9
Sport Guiding Businesses	10
Charter/Guide Vessel Licensing	10
Charter Logbook Program	10
Pacific Halibut Management.....	10
Federal Subsistence Management	13
Mail Survey Boundary Change.....	14
Enhancement.....	14
AREA-SPECIFIC PROGRAMS, ACTIONS AND ISSUES	16
Ketchikan Area	16
Local Management and Research Programs.....	16
<i>Marine Creel</i>	16
<i>Salmon Research</i>	16
<i>Trout Research</i>	16
Management Actions.....	16
<i>Herring Cove Closure</i>	16
<i>Ketchikan Creek Management</i>	16
<i>Pink Salmon</i>	16
<i>Sockeye and Chum Salmon</i>	18
<i>Chinook Salmon</i>	18
Surveys	18
<i>Salmon</i>	18
<i>Steelhead</i>	18
<i>Enhancement</i>	18
<i>Access Projects</i>	20
Other Issues	20
<i>Hydroelectric Projects</i>	20
<i>Timber Harvest</i>	20
<i>Federal Subsistence Fishery Management</i>	20
Prince of Wales Island Area.....	22
Local Management and Research Programs.....	22
<i>Marine Catch Sampling</i>	22
<i>Trout Research</i>	22

TABLE OF CONTENTS (continued)

Management Actions.....	22
2000 Board of Fisheries Regulation Changes.....	22
Escapement Surveys.....	22
<i>Coho Salmon</i>	22
<i>Steelhead</i>	22
Enhancement	24
Access Projects.....	25
Habitat Issues	25
<i>Water Use Projects</i>	25
<i>Timber Harvest</i>	25
<i>Road Construction</i>	25
Petersburg/Wrangell Area.....	26
Local Management and Research Programs.....	26
<i>Salmon</i>	26
<i>Trout</i>	26
Management Actions.....	28
Surveys	29
<i>Petersburg Creek</i>	29
<i>Marten Creek</i>	29
Access Projects.....	29
Other Issues	29
<i>Subsistence</i>	29
<i>Crystal Lake Hatchery</i>	29
<i>Habitat</i>	30
Sitka Area	30
Local Management and Research Programs.....	30
<i>Marine Creel</i>	30
<i>Redoubt Lake and Bay Creel Survey</i>	32
<i>Nakwasina River Coho Salmon Stock Assessment</i>	33
<i>Baranof Lake Research</i>	34
<i>Salmon Lake Coho Salmon</i>	35
<i>Lake Stocking Projects</i>	35
Management Actions.....	36
<i>Alaska Board of Fisheries Regulation Changes</i>	36
<i>Sockeye Salmon Restrictions</i>	37
<i>Chinook Salmon Terminal Harvest Area Management</i>	38
<i>Redoubt Lake Sockeye Salmon Closure</i>	39
<i>Silver Bay and Salmon Lake Coho Salmon Management</i>	39
<i>Sitka Sound Coho Salmon Restrictions</i>	40
<i>Sitka Sound Pacific Halibut Local Area Management Plan</i>	40
Surveys	40
<i>Steelhead</i>	41
<i>Coho Salmon</i>	41
<i>Razor Clam Monitoring</i>	43
Access Projects.....	43
Juneau / Glacier Bay Area	44
Local Management and Research Programs	44
Management Actions.....	45
<i>Chinook Salmon Terminal Harvest Area Management</i>	45
<i>Saltwater Closure Adjacent to Auke Creek</i>	46
<i>Twin Lakes Stocking</i>	46
<i>Cutthroat Trout Stocking</i>	46

TABLE OF CONTENTS (continued)

<i>Windfall Lake Sockeye Fishery</i>	46
<i>Other Board of Fisheries Regulation Changes</i>	47
<i>King Crab Personal Use Fishery</i>	47
Escapement Surveys.....	47
<i>Coho Salmon</i>	47
<i>Steelhead</i>	48
Access Projects.....	49
Other Issues	49
<i>Twin Lakes Water and Milfoil Management</i>	49
<i>Chinook Salmon Broodstock Development at Gastineau Hatchery</i>	49
<i>Auke Lake Dolly Varden and Cutthroat Trout</i>	50
<i>Increasing Guided Sport Fishing Effort at Remote Streams and Lakes</i>	50
<i>Personal Use Salmon Fisheries</i>	50
Haines / Skagway Area.....	50
Local Management and Research Programs	52
<i>Chinook Salmon</i>	52
<i>Coho Salmon</i>	53
<i>Sockeye Salmon</i>	54
<i>Pink Salmon</i>	54
<i>Dolly Varden</i>	54
Management Actions.....	57
<i>Skagway Chinook Salmon Terminal Harvest Area Management</i>	57
<i>Extension of the Chilkat Inlet Area Chinook Salmon Closures</i>	57
<i>Chilkoot Drainage Sockeye Closures</i>	57
Access Projects.....	58
Other Issues	58
<i>Land Use</i>	58
<i>Skagway Chinook Enhancement</i>	58
YAKUTAT AREA	59
2000 Board of Fisheries Regulation Changes	59
Local Management and Research Programs	59
<i>Yakutat Marine Catch Sampling and Situk River Creel</i>	59
<i>Situk River Steelhead Escapement Monitoring</i>	59
<i>Alsek River Chinook Salmon Project</i>	60
Management Actions.....	60
<i>Situk River Steelhead Management</i>	60
<i>Situk River Chinook Salmon Management</i>	60
<i>Situk River Sockeye Salmon Management</i>	61
Surveys	61
Access Projects.....	61
Other Issues	61
ACKNOWLEDGMENTS	61
LITERATURE CITED	61

LIST OF TABLES

Table	Page
1. Logbook effort and harvest by clients by mail survey area for Southeast Alaska (based on port of landing), 2000.....	11
2. Helicopter escapement survey peak counts of chinook salmon in Ketchikan area index systems, 1988–2000	18
3. Peak helicopter, foot, or weir escapement survey counts of coho salmon in Ketchikan area streams, 1994–2000.....	19
4. Annual peak steelhead escapement counts for Ketchikan area streams, 1994–2000.....	19
5. Ketchikan area access projects, 2000	21
6. Hydroelectric projects in the Ketchikan area, 2000.....	21
7. Ketchikan area timber harvest plans, 2000.....	21
8. Peak helicopter or foot escapement survey counts of coho salmon in Prince of Wales area streams, 1995–2000	24
9. Annual peak steelhead escapement counts for Prince of Wales Island area streams, 1995–2000.....	24
10. Prince of Wales area 2000 boating access projects	24
11. Prince of Wales area timber harvest plans, 2000.....	25
12. Contributions of Crystal Lake hatchery chinook salmon to sport and commercial fisheries, 1995–1999	28
13. Contributions of Crystal Lake hatchery coho salmon to sport and commercial fisheries, 1995–1999.....	28
14. Sampled effort and harvest from the Petersburg and Wrangell marine boat catch sampling programs in 2000.....	29
15. Escapements and reported subsistence harvest of sockeye salmon at Redoubt Lake along with estimated sport harvests of sockeye salmon in the Sitka SWHS area, 1982–2000.....	33
16. Estimated abundance and survival of cutthroat trout ≥ 180 mm FL and angler effort (number of anglers and angler-days fished), harvest and total catch of cutthroat trout at Baranof Lake, 1990 – 2000	36
17. Peak escapement counts of steelhead in the Sitka Area , 1973–2000.....	41
18. Peak escapement counts of coho salmon in the Sitka Area by date, 1980–2000.....	42
19. Razor clam indices for Kamenoi Beach, 1994–2000	43
20. Average peak counts of coho salmon during foot surveys of Juneau area index systems for 1981–1999 in comparison to 2000 peak counts and escapement goals.....	48
21. Estimated angler effort, catch and harvest of large (≥ 28 in.) chinook salmon in the spring Haines marine boat sport fishery, 1984–2000, and abundance of large (\geq age 1.3) chinook salmon entering the Chilkat River, 1991–2000.....	52
22. Number of hatchery chinook salmon smolts released in the Skagway area by brood year and facility, 1987–2000.....	53
23. Number of small and large chinook salmon sampled for missing adipose fins at the Skagway Boat Harbor during 2000	54
24. Peak counts of coho salmon during surveys of four index streams to the Chilkat River, 1987–2000 and mark-recapture estimates of escapement, 1990 and 1998.....	55

LIST OF FIGURES

Figure	Page
1. Map of Southeast Alaska showing the seven management areas and eight harvest survey reporting areas (A–H)	2
2. Estimated angler-days of fishing effort in saltwater and freshwater in Southeast Alaska, 1977–2000.....	4
3. Estimated sport harvests of chinook, coho, and pink salmon in Southeast Alaska, 1977–2000.....	4
4. Estimated sport harvests of Pacific halibut, rockfish, and lingcod in Southeast Alaska, 1977–2000.....	5
5. Estimated sport harvests of cutthroat trout and Dolly Varden in Southeast Alaska, 1977–2000 and total catches for these species, 1990–2000	5
6. Additional area (hatched) added to Glacier Bay SWHS area due to boundary line change implemented in 2000 survey.....	15
7. Ketchikan management area.....	17
8. Prince of Wales Island management area	23
9. Petersburg/Wrangell management area	27
10. Sitka management area.....	31
11. Juneau management area	45
12. Weekly steelhead escapement counts at Pleasant Bay Creek, 1996–1999 average and 2000	48
13. Haines/Skagway management area	51
14. Number of sockeye salmon counted through the Chilkoot River weir (1976–2000) and total harvest in the Chilkoot River/Lake sport fishery (1977–1999)	55
15. Number of pink salmon counted through the Chilkoot River weir (1980–2000)	56
16. Harvest of Dolly Varden in the Chilkoot River/Lake sport fishery, 1977–1999	56
17. Yakutat management area.....	60

ABSTRACT

Sport fishery management actions taken in Southeast Alaska during 2000 are summarized along with a description of the region and its sport fisheries. The region is divided into seven areas for management purposes and management and research activities along with issues in each area are described.

Key words: Southeast Alaska, sport fishery, fisheries management, Ketchikan, Prince of Wales, Petersburg, Wrangell, Sitka, Juneau, Haines, Skagway, Glacier Bay, Yakutat, surveys, access project, emergency order, management action

INTRODUCTION

The Southeast Region of the Division of Sport Fish, Alaska Department of Fish and Game (ADF&G), encompasses all waters of Alaska from Dixon Entrance on the south to Cape Suckling on the north (Figure 1). Southeast Alaska provides a large variety of both freshwater and saltwater sport fishing opportunities for anglers. Effort and harvests for the fisheries of Southeast Alaska are estimated through mail surveys which have been conducted annually since 1977 (Mills 1979–1994, Howe et al. 1995, 1996, 2001a, 2001b, 2001c, 2001d, Walker et al. *In prep.*). About 20% of all angler-days of sport fishing effort in Alaska are expended in Southeast Alaska.

This report summarizes sport fishery management actions, issues, and activities in Southeast Alaska during 2000. Similar reports were previously published for 1998 (Suchanek et al. 2001a) and 1999 (Suchanek et al. 2001b). Prior to 1998, the only published Southeast Alaska area management report overviewed 1994 fisheries by species (Bentz et al. 1996).

Funding for Southeast Alaska sport fish management and research programs is provided almost exclusively by sport anglers. The Federal Aid in Sport Fish Restoration Act (Wallop-Breaux), whose funds are received via federal excise taxes on sport fishing equipment and fuels, provides about 52% of the total budget. Sales of Alaska sport fishing licenses and tags (Fish and Game Fund) provide 47% of the budget, and program receipts provide the remainder of the funding.

The Wallop-Breaux Amendments also mandate that at least 15% of annual federal aid funding

goes toward recreational power boating access projects. The Sport Fish Division Access Program is a statewide effort designed to improve angler access to the state's sport fishing resources. Access projects undertaken by the Division of Sport Fish in Southeast Alaska are categorized into either large "CIP" projects for developing or improving major facilities or "Small Access Site Maintenance" projects for small repairs or improvements at existing sites. Projects are also classified as either "motorized boating" projects or "non-boating" projects. Funds spent on "non-boating" projects do not count toward the 15% mandatory spending.

The primary mission of ADF&G is to manage, protect, maintain, and improve the fish, game, and aquatic plant resources of Alaska. The department's primary goals are to ensure that Alaska's renewable fish and wildlife resources and their habitats are conserved and managed on the sustained yield principle, and that use and development of these resources are in the best interest of the economy and well-being of the people of the State. To achieve this mission for the State's sport fisheries and sport fishery resources, the Division of Sport Fish has the three following primary goals: 1) conservation of wild stocks of sport fish; 2) a diversity of recreational fishing opportunities; and 3) optimum social and economic benefits from recreational fisheries.

MANAGEMENT AREAS

Sport fish management and research programs for Southeast Alaska are conducted from ADF&G offices located in Ketchikan, Klawock, Petersburg, Sitka, Juneau, Haines, and Yakutat. For administrative purposes, these offices each correspond to surrounding management areas

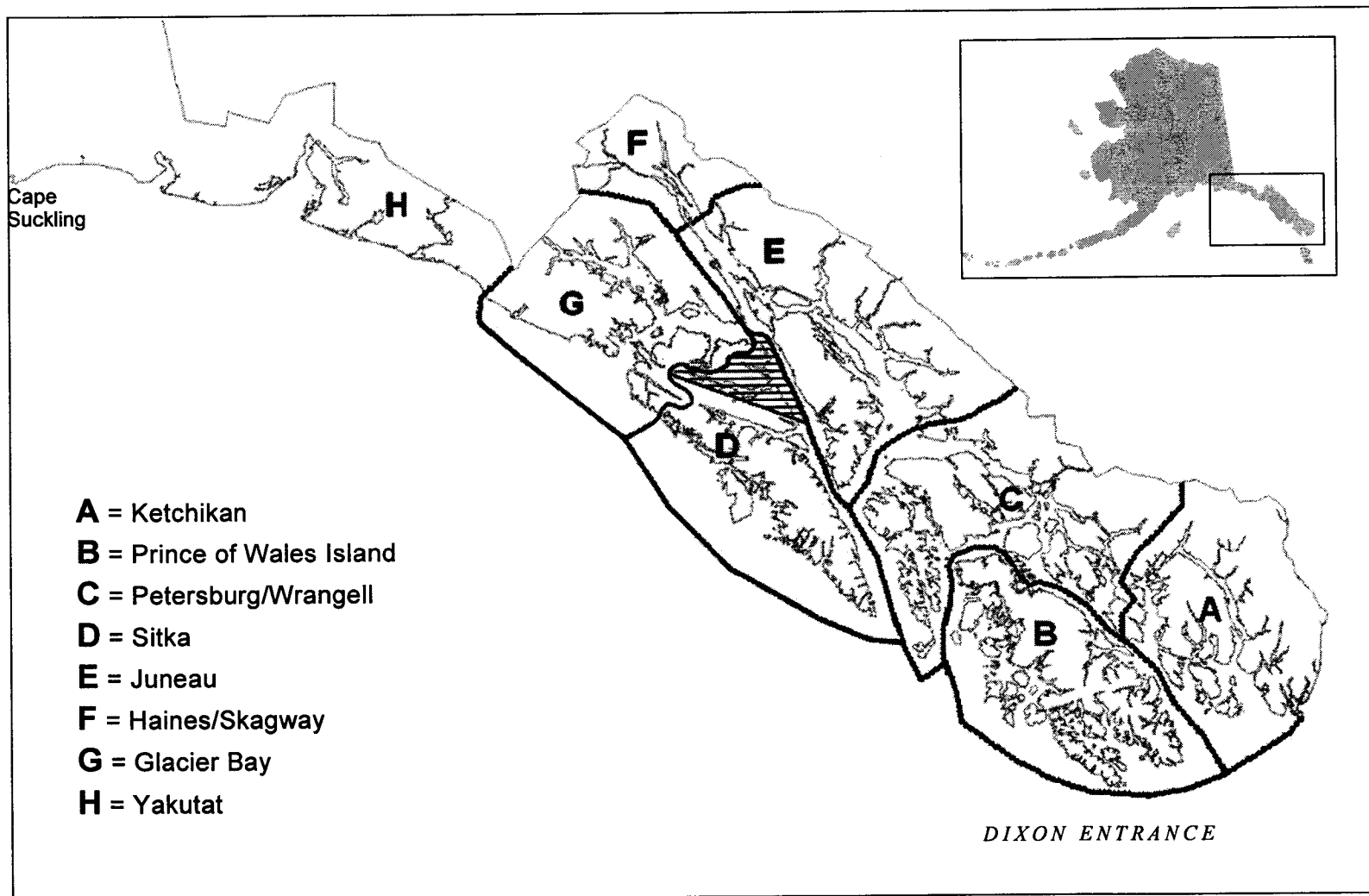


Figure 1.—Boundaries of the seven management areas and eight harvest survey reporting areas (A–H) in Southeast Alaska. The Juneau management area includes the Glacier Bay mail survey area and the hatched portion of the Sitka mail survey area. In 2000, the boundary between the Sitka and Glacier Bay harvest survey areas was modified (see Figure 6).

(Figure 1). These management areas also closely correspond to the eight survey areas for which harvests are estimated through a statewide mail survey (Howe et al. 2001d). The areas listed in the mail survey include: Ketchikan (A); Prince of Wales Island (B); Kake, Petersburg, Wrangell, and Stikine (C); Sitka (D); Juneau (E); Haines-Skagway (F); Glacier Bay (G); and Yakutat (H) (Figure 1). Up until 2000, the Glacier Bay area in the mail survey was managed from the Juneau office. In 2000, however, the boundary of the Glacier Bay area was modified (see Mail Survey Boundary Change section later in the report) and therefore a small part of this area was managed from the Sitka office in 2000. Additionally, a portion of the northern half of Chichagof Island is also managed from the Juneau office but corresponds to a portion of the Sitka area in mail surveys.

SPORT FISHERIES

Southeast Alaska provides major sport fishing opportunities for several fish species which are limited in distribution in Alaska. In 2000, for example, Southeast Alaska provided 95% of the cutthroat trout *Oncorhynchus clarki* and 60% of the steelhead *O. mykiss* sport catches in Alaska (Walker et al. *In prep.*). Major opportunities for salmon and bottomfish also abound as the region also produced the following percentages of total Alaska sport harvests in 2000: 36% of chinook salmon *O. tshawytscha*, 31% of coho salmon *O. kisutch*, 29% of Pacific halibut *Hippoglossus stenolepis*, 53% of rockfish *Sebastes*, and 65% of lingcod *Ophiodon elongatus*.

EFFORT

Most sport fishing effort in Southeast Alaska occurs in saltwater with the remaining 20% occurring in fresh water (Figure 2). Marine angling effort increased from about 200,000 angler-days in 1980 to about 435,000 in 2000. Similarly, freshwater effort increased from about 50,000 angler-days in 1980 to about 106,000 angler-days in 2000. Most of the recent increases in fishing effort have been due to increases in nonresident fishing effort as Alaska resident fishing effort has been stable.

Creel survey information and local knowledge by area management biologists has been used to

estimate effort for the major species of sport fish in Southeast Alaska during 1998 (Suchanek et al. 2001a). Target species vary substantially depending on whether anglers are fishing from a boat or shore in marine waters or in freshwater. Over 75% of the regionwide fishing effort was targeted on chinook salmon, coho salmon, or bottomfish (primarily Pacific halibut). About 44% of freshwater fishing effort was for trout or char (primarily Dolly Varden *Salvelinus malma*), while only about 4% of marine fishing effort was for these species. About two-thirds of all fishing effort was for anadromous salmon species.

HARVEST OR TOTAL CATCH OF IMPORTANT SPECIES

As previously noted, the most important fisheries in the region are those for anadromous salmon. Sport harvests of coho and chinook salmon in Southeast Alaska have increased greatly in recent years (Figure 3). In 1980, sport harvests of chinook totaled about 20,000 but from 1996 to 2000 averaged about 64,000. The chinook salmon harvest would have been even greater in recent years, except that the sport fishery has been allocated a fixed percentage of the quota set under the U.S./Canada Pacific Salmon Treaty since 1992. Coho salmon harvests increased over 6-fold from about 33,000 in 1980 to an average of nearly 207,000 from 1996–2000. Pink salmon *O. gorbuscha* harvests increased from about 35,000 in 1980 to an average of 73,000 from 1996–2000.

The next most important fisheries in Southeast Alaska are those for bottomfish, including primarily Pacific halibut, rockfish, and lingcod (Figure 4). Pacific halibut harvests have increased from about 6,000 fish in 1978 to an average of 105,000 from 1996 to 2000. Rockfish harvests increased steadily from 1977 to 1988 when they peaked at 57,000, declined for several years to a low of 26,000, and then increased again to a peak of 71,000 in 1999. Since lingcod distribution is limited primarily to the outer coast, harvests have been restricted primarily to the Sitka and Prince of Wales areas. Lingcod harvests averaged about 19,500 annually for the last five years.

The most important trout and char fisheries are those for Dolly Varden, cutthroat trout, and steelhead. Dolly Varden harvests peaked in the mid-1980s at about 60,000 (Figure 5) and have

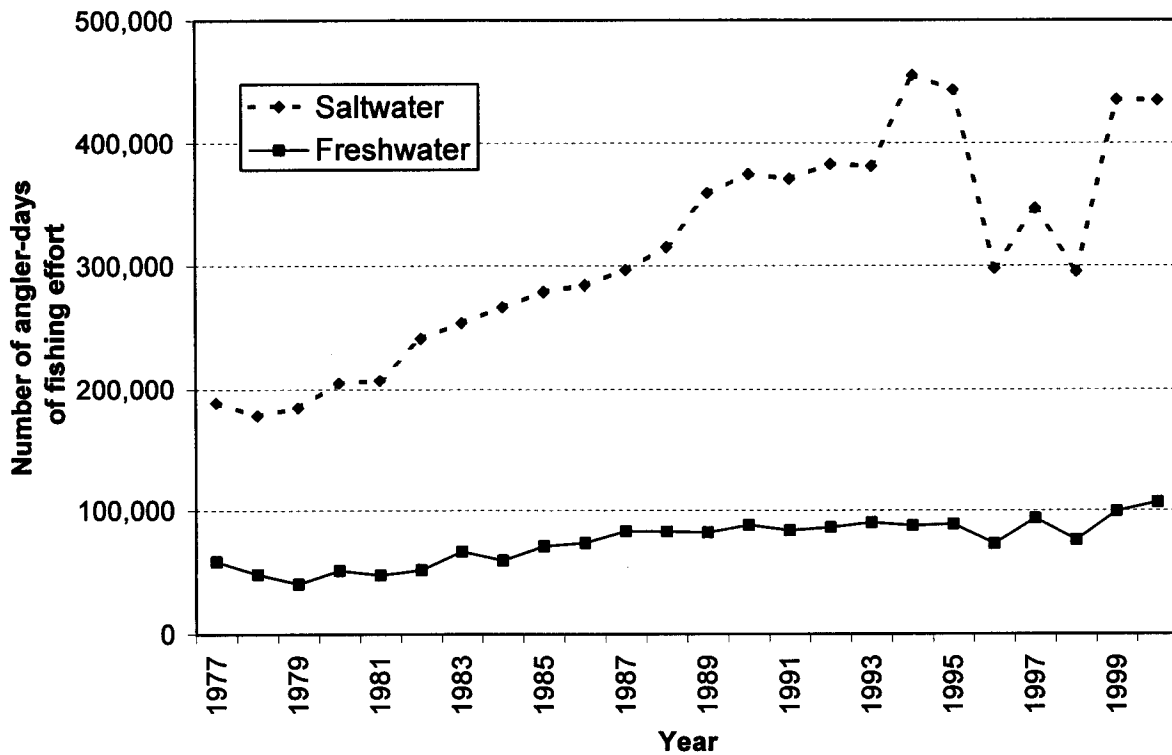


Figure 2.—Estimated angler-days of fishing effort in salt water and fresh water in Southeast Alaska, 1977–2000.

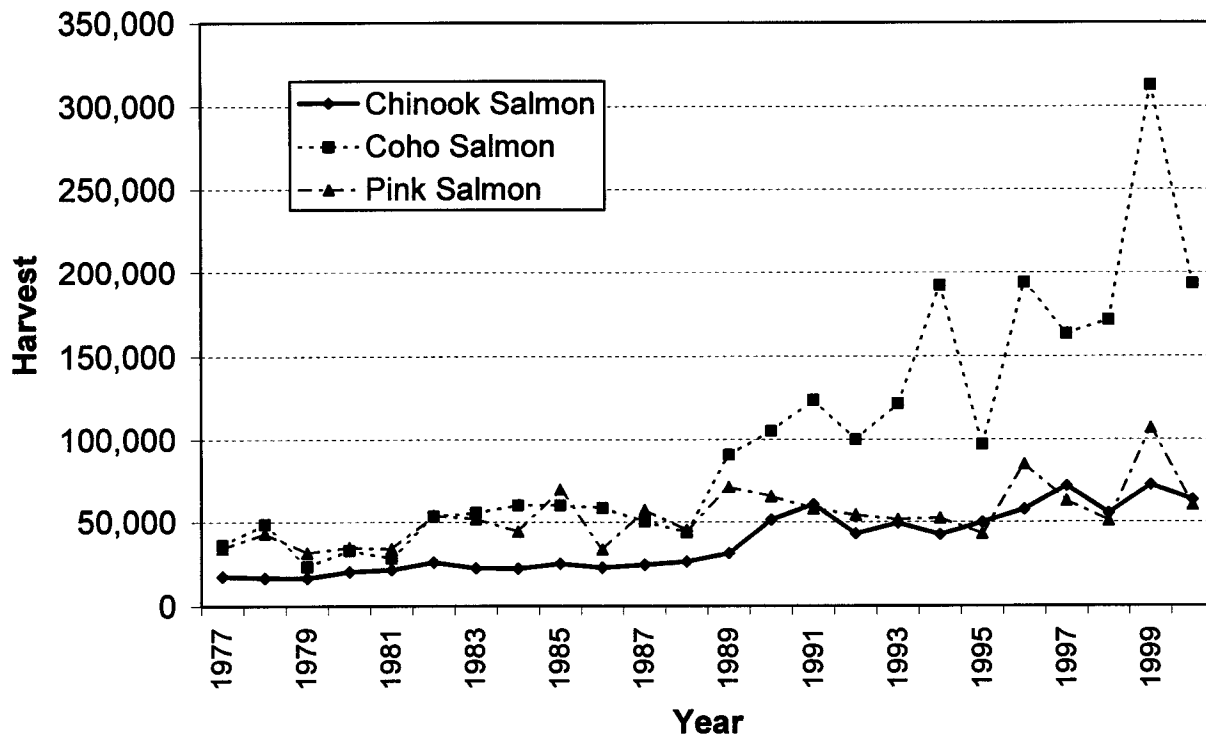


Figure 3.—Estimated sport harvests of chinook, coho, and pink salmon in Southeast Alaska, 1977–2000.

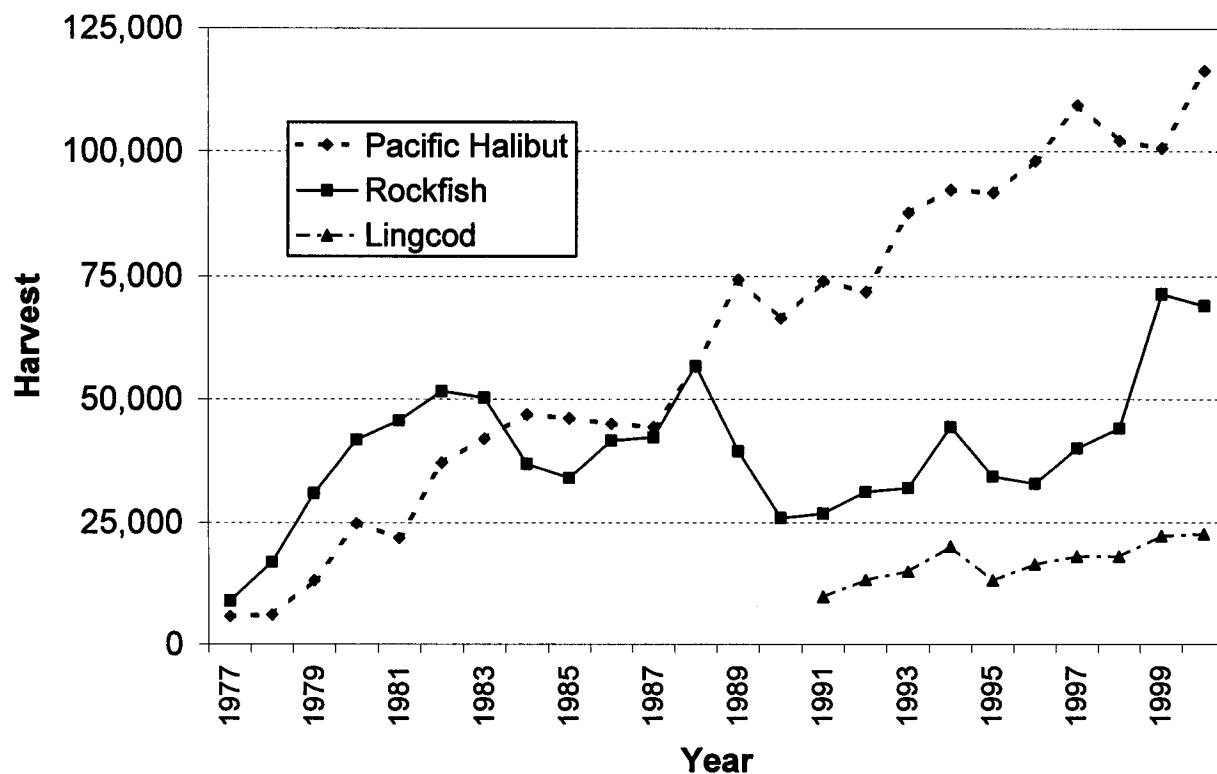


Figure 4.—Estimated sport harvests of Pacific halibut, rockfish, and lingcod in Southeast Alaska, 1977–2000.

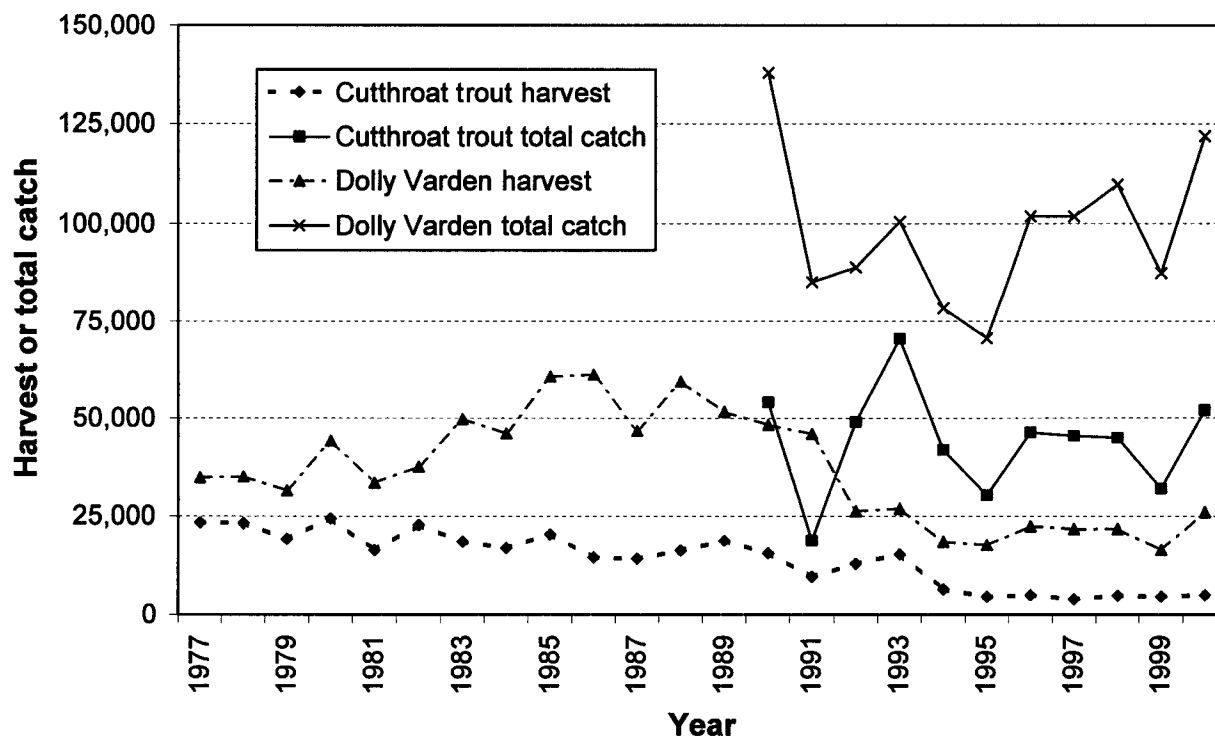


Figure 5.—Estimated sport harvests of cutthroat trout and Dolly Varden in Southeast Alaska, 1977–2000, and total catches of these species, 1990–2000.

since declined to an average of about 22,000 from 1996–2000. Only about 1 out of 5 Dolly Varden caught are harvested. Cutthroat trout harvests declined from about 23,000 in the late 1970s to about 15,000 in 1993. In 1994, more restrictive regulations (minimum size limits and reduced bag limits) were placed on all cutthroat trout fisheries and since then the harvest has averaged about 5,000. Since these restrictive management actions were taken, only about 1 of every 9 cutthroat caught has been harvested. A minimum size limit for steelhead was also enacted in 1994, and harvests in the last 5 years have averaged about 200 from an average annual catch of over 18,000. Prior to 1994, steelhead harvests had averaged 3,200 with a peak of 5,400 in 1989.

REGIONWIDE ACTIONS AND ISSUES

ALASKA BOARD OF FISHERIES ACTIONS

Alaska Board of Fisheries (BOF) meetings were held in Juneau in January 2000 and in Sitka in February 2000 to review proposals for changes in Southeast Alaska fisheries. Written reports presented at the Sitka meeting which concerned sport fish management in Southeast Alaska included an overview of the sport fishery for chinook salmon (Frenette et al. *Unpublished*), a report on abundance based management of the chinook sport fishery (Suchanek, *unpublished*), and a report on the charter logbook program (Frenette et al., *unpublished*).

The meetings resulted in a number of regulation changes that impact sport, subsistence, and personal use fishermen in Southeast Alaska. An overview of the regionwide sport regulation changes passed are discussed below while specific area changes are discussed in the appropriate management area sections of this report.

Chinook Salmon

The BOF adopted a new chinook salmon management plan for the Southeast Alaska sport fishery but left unchanged a 20% allocation to the sport fishery from the Pacific Salmon Treaty quota. Bag limits will be either 1 or 2 chinook salmon with a minimum size of 28 inches, depending on the preseason abundance of chinook

salmon estimated through the Pacific Salmon Treaty process. Nonresident anglers will have an annual limit of 2, 3, or 4 chinook salmon 28 inches or more in length, also depending on preseason abundance. Bag limits for all anglers and annual limits for nonresidents will be determined prior to May 1 and will remain in effect for the entire calendar year. If abundance is extremely low, additional fisheries restrictions may be implemented preseason. There will be no inseason regulation changes as in past years.

Regulations to provide for increased harvests of Alaska hatchery chinook salmon in areas opened by emergency order (E.O.) were also modified. Bag limits may now be uniquely set for each terminal area to achieve management objectives. Regulations were also modified so that if returns are adequate, chinook salmon caught in these areas do not count toward annual limits for nonresident anglers.

Lingcod

The BOF adopted a new Southeast Alaska lingcod management plan for all gear groups including sport anglers. This plan sets out specific guideline harvest levels for all gear groups in 7 areas within Southeast Alaska, and gave the department specific tools to manage the sport fishery. The following list summarizes the changes for the region's lingcod sport fisheries:

1. The opening date for the lingcod sport season was changed from May 1 to May 16, but the ending date of November 30 remained unchanged.
2. The department may now change lingcod size limits and set annual limits for non-resident anglers and anglers fishing from charter vessels in the 7 management areas by E.O.
3. During specific time periods and areas, the department may prohibit anglers fishing from vessels from filleting, mutilating, or otherwise disfiguring lingcod until the fish are offloaded from the vessel. However, during these times, anglers can gill and gut lingcod before being offloaded from the vessel, or the lingcod may be consumed onboard the vessel.
4. In areas where lingcod size limits are in effect, lingcod may be landed only by hand or with a landing net.

Trout

The BOF changed the cutthroat and rainbow trout minimum size limit from 12 inches to 11 inches for most waters in Southeast Alaska. The 22-inch maximum size limit remained unchanged.

Shellfish

Subsistence, personal use, and sport fishermen are now prohibited from tampering with or removing Dungeness crab *Cancer magister* and shrimp from a shellfish pot without prior permission of the owner. Subsistence, personal use, and sport fishermen are also prohibited from retaining sublegal male and all female Dungeness crab. All such crab must be returned unharmed to the water.

Several other regulations passed earlier became effective on January 1, 2001. Subsistence, personal use, and sport Dungeness crab pots are now required to have escape rings measuring a minimum of 4 3/8 inches in diameter on opposite sides of the pot. Subsistence, personal use, and sport shrimp pots also cannot now exceed 153 inches in circumference and cannot have more than one bottom.

CHINOOK SALMON MANAGEMENT

Chinook salmon are fully allocated in Southeast Alaska among user groups. A quota, established under the U.S./Canada Pacific Salmon Treaty, limits the harvest of chinook salmon by all commercial and sport fisheries in Southeast Alaska. The BOF has allocated a share of this quota to the sport fishery and the rest to various commercial fisheries. In 2000, management of the sport fishery for chinook salmon was changed substantially under the revised management plan passed by the BOF.

Preseason Management

Management of chinook salmon in Southeast Alaska is based on abundance. The preliminary chinook salmon quota is based on the projected abundance of chinook salmon determined by a coastwide model which calculates a preseason abundance index. For 2000, the chinook salmon preseason abundance index of 1.01 announced in late April resulted in an all-gear quota of 152,850 fish, of which the sport fishery was allocated a

harvest target of 27,535 fish (excluding most harvests of Alaska hatchery fish and harvest in the Situk River).

Given that the preseason abundance index was less than 1.1, the newly revised Southeast Alaska King Salmon Management Plan now required that both bag limits and nonresident annual limits be reduced. Therefore, the chinook salmon bag and possession limit in marine waters of Southeast Alaska was decreased to 1 fish 28 inches or more in length on May 3, 2000 (E.O. 1-4-00). In addition, the annual limit for nonresident anglers was decreased from 4 to 2. It was projected that these regulatory changes would decrease the 2000 sport harvest to 34,100 treaty chinook salmon.

Because the 20% allocation of 27,535 would still be exceeded, additional regulations were needed to reduce the harvest from 34,100. Therefore, four additional harvest restrictions for 2000 were imposed June 3 on nonresident anglers and anglers fishing from charter vessels (E.O. 1-5-00):

1. Retention and possession of chinook salmon was prohibited if more than four lines were being fished from a chartered vessel from June 3 through June 30;
2. Nonresident anglers and anglers fishing from a chartered vessel could not retain chinook salmon on any Wednesday from June 3 through July 31;
3. Nonresident anglers and anglers fishing from a chartered vessel could not retain chinook salmon from August 1 through September 30; and
4. Nonresident anglers and anglers fishing from a chartered vessel could not retain chinook salmon within two large areas on the outer coast from July 12 through July 31. One of these areas encompassed the outside coast around Sitka from Redfish Cape near the south end of Baranof Island north to Cape Edward on Graves Island located off the west coast of Chichagof Island. The other area encompassed the west coast and a portion of the southeast coast of Prince of Wales Island.

The first 3 restrictions applied to all marine waters in Southeast Alaska, including Yakutat, except for terminal harvest areas established by E.O. to harvest excess Alaska hatchery chinook salmon.

In aggregate, these 4 restrictions were projected to reduce the harvest down to the harvest target. Normally, these restrictions would have been placed into effect by May 1, however, implementation was delayed in 2000 because the revised management plan was not officially in effect until late May.

On June 5, the Alaska Sportfish Council (ASC) filed for a temporary restraining order (TRO) on implementation of the four restrictions on nonresident anglers and anglers fishing from a chartered vessel that went into effect on June 3. The TRO was filed in the Ketchikan court system and Judge Collins held the hearing for the TRO in Juneau on June 7. Mike Holman (Ketchikan attorney and lodge owner) represented ASC. At the beginning of the hearing, Mike stated that the ASC only wanted to have the TRO apply to the 4 line limit and non-retention on Wednesdays restrictions. Their legal filing included all four of the provisions.

Judge Collins heard arguments from both sides and decided not to implement a TRO based on the information provided. She specifically said:

1. Public notice of the potential changes to the management plan was adequate;
2. The abundance index model is not flawed, but complicated;
3. Restrictions chosen by ADF&G follow the objectives of the management plan;
4. The court does not make allocation decisions;
5. The management plan and E.O.'s did not violate any provisions in the Constitution or Alaska statutes; and
6. Equal access provisions were upheld.

Subsequently, a "preliminary injunction" hearing was held in Juneau on June 14 based on the filing. The motion for a preliminary injunction was also denied by Judge Collins based on many of the same findings as in the previous hearing.

In late June, review of results from the coastwide chinook model indicated that some recent changes to the model were incorrect. Correction of the straying rates and a "recalibration" of the model indicated that the revised abundance index for Southeast Alaska in 2000 was 1.14. Therefore, on

June 27, the 4 restrictions on the charter and non-resident fishery detailed above were rescinded. In addition, the nonresident annual limit for chinook salmon was increased to 3 from 2, because the management plan specifies a 1-fish bag limit for all anglers and a 3-fish annual limit for non-residents if the abundance index is between 1.1 and 1.2. These regulations remained in place for the rest of the year.

Creel survey data were used to project a preliminary sport harvest of 39,400 treaty chinook salmon for the 2000 season. This was about 4,400 treaty chinook salmon above the 20% allocation. The total sport harvest of 52,000 chinook salmon included about 13,900 Alaska hatchery fish. Combination of final SWHS estimates with hatchery contribution data resulted in a harvest of 41,846 treaty fish from a total harvest of 63,173.

Terminal Harvest Area Management

Regulations provide for increased bag limits to increase harvests of Alaska hatchery chinook salmon in terminal areas. In 2000, bag limits were increased in a number of both freshwater and marine areas to harvest excess hatchery chinook salmon, including jacks <28 inches in length. These areas are described for each management area later in the report. Most of these Alaska hatchery chinook salmon did not count toward the allocation. In addition, chinook salmon caught in many of these areas (where limits were ≥ 3 chinook salmon ≥ 28 inches in length) did not count toward nonresident annual limits. The 4 additional restrictive regulations detailed above also did not apply (or would not have applied) in terminal areas, thus providing nonresident and guided anglers opportunities to fish on Wednesdays and with more than 4 lines per vessel.

LINGCOD MANAGEMENT

In February 2000, the Alaska Board of Fisheries substantially changed management of lingcod fisheries in Southeast Alaska in response to indications of a widespread decline in abundance. The BOF established a guideline harvest level (GHL) management approach for sport and commercial fisheries in Southeast Alaska, allocated the GHL among sport and commercial

fisheries in each of seven management areas, and reduced allowable harvests by setting the GHL lower than recent harvest levels.

Under the new management strategy, the sport fishery will be managed on an annual basis to maintain lingcod harvests at or below GHLs for each of seven management areas. Following each season, past harvest trends will be evaluated to determine whether management action is necessary. If harvests substantially exceed the GHL, restrictions will be applied the following season. Similarly, if harvests fall well below the GHL, restrictions will be eased. To achieve harvest reductions, the BOF delegated to the department the additional authority to adjust size and annual limits for guided and nonresident anglers only, and to require that, for areas in which minimum size limits are in effect, lingcod may be landed only by hand or with a landing net. Landing requirements that prohibit the use of gaff hooks will substantially reduce incidental mortality associated with using gaffs to land undersized lingcod.

The GHL for the sport fishery in northern Southeast Alaska represented only about 61% of the lingcod harvested in this fishery during 1997 and 1998. Therefore to stay within guidelines set by the BOF, the 2000 sport harvest of lingcod in northern Southeast Alaska needed to be reduced by 39%. Starting on June 6, the lingcod bag and possession limits for all sport anglers fishing in the marine waters of a large portion of northern Southeast Alaska was therefore reduced from 2 fish per day, 4 in possession to 1 fish per day, 2 in possession, and lingcod could be landed only by hand or with a landing net (E.O. 1-7-00). The area with special regulations included marine waters north of a line between Hazy, Coronation, Kuiu, and Kupreanof islands and the mainland and south of Icy Point on the mainland north of Cape Spencer. This area encompasses all waters surrounding Admiralty, Baranof, and Chichagof islands. Additionally, a minimum size limit of 38 inches was placed into effect for guided and non-resident anglers in northern Southeast Alaska waters. Normally, these restrictions would have been placed into effect by May 15; however, implementation was delayed in 2000 because the

revised management plan was not officially in effect until late May. Management actions were also taken in commercial fisheries to meet their respective GHLs.

Since the department wished to increase biological sampling of lingcod for better determination of length and sex composition, a regulation allowing ADF&G to prohibit heading or filleting lingcod until the fish have been offloaded was also passed by the BOF to enable the department to maximize fishery information obtained during on-site creel sampling. Therefore, E.O. 1-7-00 also required that marine boat anglers possessing sport caught lingcod and returning to any ports with creel sampling programs could not fillet, mutilate, or discard the head of lingcod until offloaded, unless they were preserved or had been consumed onboard. This regulation was enacted for the following communities and dates: Ketchikan, Sitka, Juneau, and Yakutat (June 6–September 24); Craig, Klawock, Petersburg, and Wrangell (June 6–September 10); and Haines (June 6–25).

PROHIBITION ON HEADING OR FILLETING OF SALMON

In 1998, the BOF gave ADF&G the authority to prohibit heading or filleting of salmon when and where creel sampling programs were in place. This regulation change was intended to provide for increased recoveries of coded wire tags (CWT's) implanted in chinook and coho salmon for estimation of the contributions of both wild and hatchery stocks. This was especially important regarding Alaska hatchery chinook salmon since these fish generally do not count toward the annual quota.

Since 1998, enactment of this regulation, in combination with some extra catch sampling, increased sampling rates for chinook salmon from 18% in 1997 to 29% in 1998 and 26% in 1999. Coho sampling rates were increased from 15% in 1997 to 33% in 1998 and 31% in 1999. Therefore, the heading and filleting regulation was again enacted in 2000 for marine boat anglers returning to any harbors or boat launches connected to the following ports during the following time periods (E.O. 1-02-00):

Ketchikan, Juneau, Sitka, and Yakutat:

April 24–September 24

Craig, Klawock, and Wrangell:

April 24–September 10

Petersburg:

May 1–September 10

Haines:

May 8–June 25

Anglers were allowed to gut and gill chinook and coho salmon before returning to port, and anglers could fillet and head their chinook and coho salmon on their boats once they had returned to a docking facility and tied their boat up to a float. Overall CWT sampling rates for 2000 remained excellent at 31% for chinook salmon and 33% for coho salmon.

SPORT GUIDING BUSINESSES

A total of 628 registered sport guiding businesses had inseason mailing addresses in Southeast Alaska in 2000. These businesses were linked with 950 guides with inseason mailing addresses in Southeast Alaska. Guides and businesses with permanent mailing addresses in Southeast Alaska totaled 800 and 613, respectively, for 2000. More businesses (646) indicated that they intended to provide guide services in salt water in Southeast Alaska only while 29 additional businesses indicated that they would provide marine guide services in both Southeast and Southcentral Alaska. Freshwater guide services in Southeast Alaska were to be provided by up to 424 businesses. All of these statistics were very similar to registration totals for 1999.

CHARTER/GUIDE VESSEL LICENSING

All vessels used in charter/guided sport fishing activities were again required to be licensed with Commercial Fisheries Entry Commission (CFEC) in 2000. A total of 1,299 vessels were licensed with home ports in Southeast Alaska in 2000, an increase of 2% (23 vessels) over 1999. This total includes those used in fresh water or for transporting anglers to shore, as well as those used for marine charters.

CHARTER LOGBOOK PROGRAM

The mandatory saltwater charter vessel logbook program first implemented in 1998 was continued in 2000. Logbook information was again turned into the department on a weekly basis.

By the end of the 2000 season, forms were received from 697 vessels from 447 businesses documenting marine charter boat sport fishing activities in Southeast Alaska during 2000. This was an increase of about 7% and 5%, respectively, from the number of active vessels (649) and businesses (424) in Southeast Alaska during 1999.

The distribution of reported logbook effort and harvest by mail survey area indicated that the Sitka area was the most heavily used area in Southeast Alaska (Table 1). Overall, charter clients expended about 103,000 angler-days of salmon fishing effort and 64,000 angler-days of bottomfishing effort (many fished for both targets on a given day) in Southeast Alaska. This was an increase of 1% in salmon fishing effort and an increase of 11% in bottomfishing effort from that reported in 1999. Reported harvests included about 30,000 chinook salmon, 113,000 coho salmon, 44,000 pink salmon, 94,000 Pacific halibut, 14,000 lingcod, and 50,000 rockfish. Salmon harvests were generally less than those reported for 1999 while harvests of bottomfish (Pacific halibut, lingcod, and rockfish) all increased substantially.

PACIFIC HALIBUT MANAGEMENT

During 2000, changes to the sport charter industry for the taking of Pacific halibut developed rapidly in both Southeast and Southcentral Alaska. A push for regulating the halibut sport charter industry dates as far back as 1993, with an original proposal for fishery regulation submitted to the North Pacific Fisheries Management Council (NPFMC) by commercial fishing interests in Southcentral Alaska. The original proposal of 1993 led to committee work, whose members composed a 6 item "Problem Statement" which eventually blossomed into a guideline harvest level (GHL) concept for the charter vessel fleets in International Pacific Halibut Commission (IPHC) Areas 2C and 3A. The GHL concept continued to evolve from 1995 to early 1997 and included mention of moratoriums, caps,

Table 1.—Marine charter logbook effort and harvest by clients by mail survey area for Southeast Alaska (based on area fished), 2000.

Mail survey area	Client angler-days ^a		Harvests of important species					
	Salmon	Bottomfish	Chinook salmon	Coho salmon	Pink salmon	Pacific halibut	Lingcod	Rockfish
Ketchikan	23,069	5,376	2,968	11,896	27,746	7,054	636	4,148
Prince of Wales I.	20,987	18,598	5,440	37,561	7,670	29,526	8,058	14,461
Petersburg/Wrangell	1,736	2,392	651	692	337	3,933	57	696
Sitka ^b	30,872	22,532	14,834	44,435	2,661	35,109	2,595	18,463
Juneau	15,042	6,413	2,601	7,671	4,177	8,118	185	7,246
Haines/Skagway	3,236	383	1,461	21	12	290	1	44
Glacier Bay ^b	6,393	6,328	1,672	8,555	1,121	6,705	908	3,868
Yakutat	1,413	1,996	433	1,677	8	3,410	1,610	1,155
Total	102,748	64,018	30,060	112,508	43,732	94,145	14,050	50,081
Change from 1999	1%	10%	-15%	-40%	-22%	35%	27%	74%
Change from 1998	14%	-2%	-14%	2%	-16%	38%	15%	86%

^a Client angler-days for salmon and bottomfish should not be summed because many anglers fish for both types of fish on the same trip. Summing across the two types of fisheries will produce an overestimate of total client angler-days fished.

^b The northern boundary between the Sitka and Glacier Bay SWHS areas was revised in 2000 so that the size of the Glacier Bay area was significantly increased.

integration with the existing commercial Individual Fishing Quota (IFQ) system, and even included an outside economic analysis by the Institute of Social and Economic Research (ISER) in Anchorage.

The NPFMC reviewed a revised analysis of alternatives for the GHL concept in April 1997, at which time they directed their staff to “*further condense the study to a shorter, more readable document for public review.*” The staff’s revision was presented to NPFMC members in May 1997 and final action was taken in September of that same year. But due to lack of regulatory structure (e.g., management tools such as bag limits, line limits, etc.), they were unable to proceed with implementation by the National Marine Fisheries Service (NMFS). The Secretary of Commerce published the intent of the NPFMC in the Federal Register as a “notice” rather than as a regulation at that time. Work continued on development of the GHL, and involved not only NPFMC

analytical staff, but also staff from ADF&G who were most knowledgeable with onsite survey data. Onsite survey data was key for development of management “tools” necessary for implementation. By late 1999, NPFMC staff tasked with conducting the necessary analysis of 4 preferred alternatives had successfully presented their results to the NPFMC’s Statistical and Science Committee (SSC) and Advisory Panel (AP) and were given approval to seek public comment on their final draft analysis. The draft document “*Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a regulatory amendment to implement management measures under a guideline harvest level and/or moratorium for halibut in Areas 2C and 3A*” was released for public review and comment in early January 2000.

In February 2000, the NPFMC adopted GHLs for the charter vessel fleets in both IPHC Areas 2C and 3A after review and evaluation of written

and oral testimony. Each GHL was based on 125% of the 1995–1999 average halibut harvest (biomass in pounds) by the guided fishery as determined by numbers of fish estimated via the SWHS and average weights determined by onsite biological sampling. The 2000 GHL in IPHC Area 2C (Southeast Alaska south of Cape Spencer) was set at 1.4 million pounds, and would be reduced in proportion to reductions in area abundance as determined by the IPHC annually. The first step reduction (if necessary in 2001) would be 15%, and additional annual 10% step reductions would occur accordingly as abundance levels declined. This management scheme was to be responsive to changes in abundance as determined by the IPHC's CEY (Constant Exploitation Yield) model. The plan would also allow the GHL to “step-up” when abundance levels returned to pre-reduction levels.

If harvests went over the GHL in a given year, then restrictions that would reduce the projected harvest the following year (trip limits, prohibition of retention by captain and crew, etc.) would be implemented. Depending on the amount of reduction necessary, the management measures would be reviewed and adjusted after verification of response of charter harvests to the management measures.

During the process of reviewing and analyzing the GHL alternatives in 1999, another movement was underfoot by charter vessel associations in IPHC Areas 2C and 3A. A select group of industry representatives were at work devising a proposal that would parallel the existing commercial IFQ system. Despite the time and effort invested in the GHL management scheme, the NPFMC also adopted—and “fast-tracked”—the “Charter IFQ” proposal as a regulatory amendment in February 2000. The NPFMC also approved formation of an industry committee to develop the elements and options for addition of halibut charter participants to the commercial IFQ system. Initial review on this amendment was scheduled for December 2000 with final action expected in February 2001. In all likelihood, this system would not be in place and functional until at least 2003 (and more likely 2004) leaving the approved GHL management scheme in place until then. Initial allocations would likely include data collected in the 1998 and 1999 Saltwater Charter Vessel Logbook

administered by ADF&G: logbook data collected during 2000 would be excluded.

It is still unclear who would qualify for an initial IFQ allocation and how much the total allocation would be. During the October 2000 meeting, the NPFMC identified a number of issues which would establish the framework of the IFQ system for the guided sport halibut fishery in Southeast and Southcentral Alaska: Issue 1—Initial IPHC Area specific quota share; Issue 2—Initial Quota Share to Whom; Issue 3—Qualification Criteria; Issue 4—Distribution of Quota Share; Issue 5—Transferability of Quota Share; Issue 6—Receiving Quota Share; Issue 7—Caps; Issue 8—Miscellaneous Provisions.

In June 2000, the Council received and reviewed two discussion papers from the Gulf Coastal Communities Coalition (GCCC)—an advocacy group. Despite the lack of formal analysis, the NPFMC thought it was important to receive public comment on the papers. Both papers made reference to “National Standard 8” of the Magnuson-Stevens Act, but the NPFMC noted that this standard only applied to groundfish and sablefish, and not to halibut as it is managed under the Northern Pacific Halibut Act of 1982. However, the “Problem Statements” were revised accordingly and now make reference that *...it was Congress' clear intent to include halibut in considering impacts to smaller coastal communities in development and management of IFQ fisheries for halibut under that National Standard.* There are 24 communities in Southeast Alaska which will be included as potential candidates for receiving set-aside quota share for future charter business development if the alternative is adopted in final action for the sport “IFQ system” being reviewed by the NPFMC.

Additionally in 2000, the Council voted to not proceed with an areawide (2C and 3A) vessel moratorium. Rather, they solicited the BOF for supporting the issue through the Local Area Management Plan (LAMP) process where needed.

During the summer of 2000, SWHS estimates used in the initial GHL analysis were revised due to changes in source data and methodologies used by ADF&G. New harvest estimates and subsequent computations of biomass had to be compiled and resubmitted to the NPFMC for

consideration in reevaluating the initial GHLS. SWHS estimate revisions increased Area 2C biomass estimates in 1996 and 1997 by 27% and 21%, respectively. However, revised estimates for 1998 decreased by 10%. The resulting changes to the GHL calculations were nominal, with the Area 2C level rising only slightly (less than 0.5%). Despite the minimal change, NPFMC staff will submit a supplemental analysis with corrected figures and recommend that the Secretary of Commerce implement the charter GHLS in both 2C and 3A using the revised figures. Further analysis of the proposed IFQ/Set-aside system will also utilize the revised figures.

Based on preliminary projections made by ADF&G staff for 2000, it appears that the Southeast (Area 2C) charter vessel fleet remained under their respective GHL by about 350,000 pounds (1.05 million pounds vs. 1.40 set by the original GHL). Therefore, restrictions in 2001 will not be necessary given the small changes in the GHL due to the SWHS revisions.

A summary of fishery performance statistics for monitored Pacific halibut fisheries in Southeast Alaska for 2000 can be found in a report presented to the IPHC (Jaenicke and Frenette, *unpublished*).

FEDERAL SUBSISTENCE MANAGEMENT

Two management actions were taken in 2000 as a result of the federal government's take over of subsistence management on federal lands on October 1, 1999. First, federal and non-federal (sport and subsistence) fisheries at Redoubt Lake and Bay were closed concurrently by ADF&G and, in waters under federal jurisdiction, by the U.S. Forest Service (USFS) due to poor sockeye returns. This closure was the first in which Federal fisheries managers took parallel action with the state, and was one such instance of relatively few statewide. Also, on August 15, the Federal Subsistence Board authorized Native American Traditional Indian Value Enrichment, Inc. (NATIVE) to take 24 coho salmon from the Nakwasina and Katlian Rivers with beach seines, gillnets, spears, gaffs and/or rod and reel between September 15 and October 31.

The Federal Subsistence Board published 14 regulatory proposals to change Federal subsistence

regulations for the 2001–2002 regulatory year, and distributed those proposals for public comment through June 16, 2000. The Southeast Regional Advisory Council met October 11–13, 2000 to deliberate each proposal and on December 5–7, the Federal Subsistence Board adopted nine proposals affecting Southeast Alaska fisheries. Board action relevant to sport fishing resulted in the following changes to federal regulations:

- Revised customary and traditional (C&T) use determination for Southeast Alaska. All residents of Southeast Alaska and Yakutat Areas were determined to be eligible for Dolly Varden, trout, smelt, and eulachon in Districts of Southeast Alaska and Yakutat not previously identified as C&T use areas.
- Provided for the take of cutthroat trout and Dolly Varden only under the terms of federal subsistence fishing permit with rod and reel only, no bait. Established a daily harvest limit of 10 Dolly Varden and:
 - In Baranof Lake, Florence Lake, Hasselborg Lake and River, Mirror Lake, Virginia Lake, and Wilson Lake, established a daily limit of 6 cutthroat and rainbow trout, in combination, between 11 and 22 inches in length;
 - In remaining waters, established a daily limit of 2 cutthroat and rainbow trout, in combination, between 11 and 22 inches in length.
- Provided for the take of steelhead on Prince of Wales Island only under the terms of a Federal subsistence fishing permit. Established an annual harvest limit of two fish, 36 inches or larger, and allowed the use of dip net and rod and reel only, no bait.
- Closed streams draining into Falls Lake, Gut Bay and Pillar Bay to the harvest of sockeye salmon by non-federally qualified users.
- Provided for harvest of coho salmon in District 3 only under the terms of a Federal subsistence fishing permit. Established a year-round season with a daily harvest limit of 20 fish per household, and allowed spears, dip net, and rod and reel only. Bait may be used only from September 15 through November 15.

Division staff participated throughout the Federal Subsistence Board regulatory process by commenting on regulatory proposals, assisting USFS staff by providing information used in the federal staff analysis, directly participating at the Regional Advisory Council and Federal Subsistence Board meetings, and otherwise sharing information.

In May, the Federal Office of Subsistence Management put out a call for pre-proposals for 2001 fishery investigation projects to address high priority information needs related to subsistence fisheries. In October, Division staff submitted 5 pre-proposals for stock monitoring projects, and all pre-proposals were advanced to the next stage where detailed fishery investigation plans were required. The five stock monitoring proposals submitted included steelhead weirs at Kadake Creek and Hamilton River, steelhead escapement monitoring on Prince of Wales Island, a cutthroat trout production project, and a coho and sockeye stock monitoring project at Salmon Lake near Sitka. Subsequently, the Salmon Lake project was funded for federal fiscal years 2001–2003.

MAIL SURVEY BOUNDARY CHANGE

As previously noted, the SWHS provides estimates of sport harvests for 8 areas of Southeast Alaska (Figure 1). For the 2000 SWHS, the boundary between the Glacier Bay and Sitka areas was modified. The southern boundary of the Glacier Bay area now encompasses all of Icy Strait and Cross Sound, as well as all Chichagof Island drainages into these water bodies (Figure 6). The previous boundary between the Glacier Bay and Sitka areas had bisected the middle of Icy Strait and Cross Sound.

It is thought that better harvest estimates for the Cross Sound and Icy Strait area will now be obtained as anglers fishing this area will know to record their fishing information in the Glacier Bay SWHS area. Since anglers fishing out of Hoonah, Elfin Cove or Gustavus commonly cross Icy Strait to fish on the other side, it is believed that previously some anglers did not know in which SWHS area they were fishing in. If a consistent sampling program for coded wire tags is implemented in any (or several) of these communities, it will be much easier to expand stock contribution estimates to the Icy Strait and Cross Sound fisheries.

Because most of the previous Glacier Bay SWHS area also was mostly inaccessible to anglers (outer coastal portion is extremely remote while boat access to most of inner Glacier Bay is highly restricted by U.S. Park Service), the potential for growth in sport harvests in the Glacier Bay area was limited. Sport harvests in the Sitka SWHS area have increased greatly over the past decade due mostly to increases in harvests in the immediate vicinity of the City of Sitka. The boundary change should allow future changes in Icy Strait/Cross Sound harvests to be closely monitored, as they will not be lumped with much larger harvests occurring in the immediate Sitka vicinity.

Because little freshwater fishing occurs in most of the mainland Glacier Bay drainages, there is now much better potential to obtain harvest estimates for popular fishing drainages (Game Creek, Neka River, Mud Bay Creek) on the northern half of Chichagof Island. Space was available on the Glacier Bay SWHS section of the mail survey to list these drainages which was not available on the Sitka section (due to the number of other popular fishing drainages listed for Baranof Island).

ENHANCEMENT

Hatchery chinook and coho salmon are released in large numbers in Southeast Alaska and provide substantial fishing opportunities for sport anglers. In 2000, about 7.2 million chinook salmon smolts were released by hatcheries throughout Southeast Alaska. Of these, about 2 million chinook smolts were paid for by sport anglers. Chinook releases paid for by sport anglers included about 800,000 smolts in the Ketchikan area, 710,000 in the Petersburg area, and 430,000 in the Juneau area. About 150,000 coho smolts released in the Petersburg area from Crystal Lake hatchery were also funded by sport anglers. Hatchery released coho smolts and fry in Southeast Alaska totaled 14.4 million during 2000.

A large number of chinook salmon taken in Southeast Alaska also originate from hatcheries in British Columbia, with others taken from hatcheries in Washington and Oregon. Much smaller numbers of non-Alaskan hatchery coho salmon are also taken. Detailed estimates of hatchery contributions for both Alaskan and non-Alaskan stocks taken in the marine boat sport fisheries of Southeast Alaska are presented in Hubartt et al. (2001).

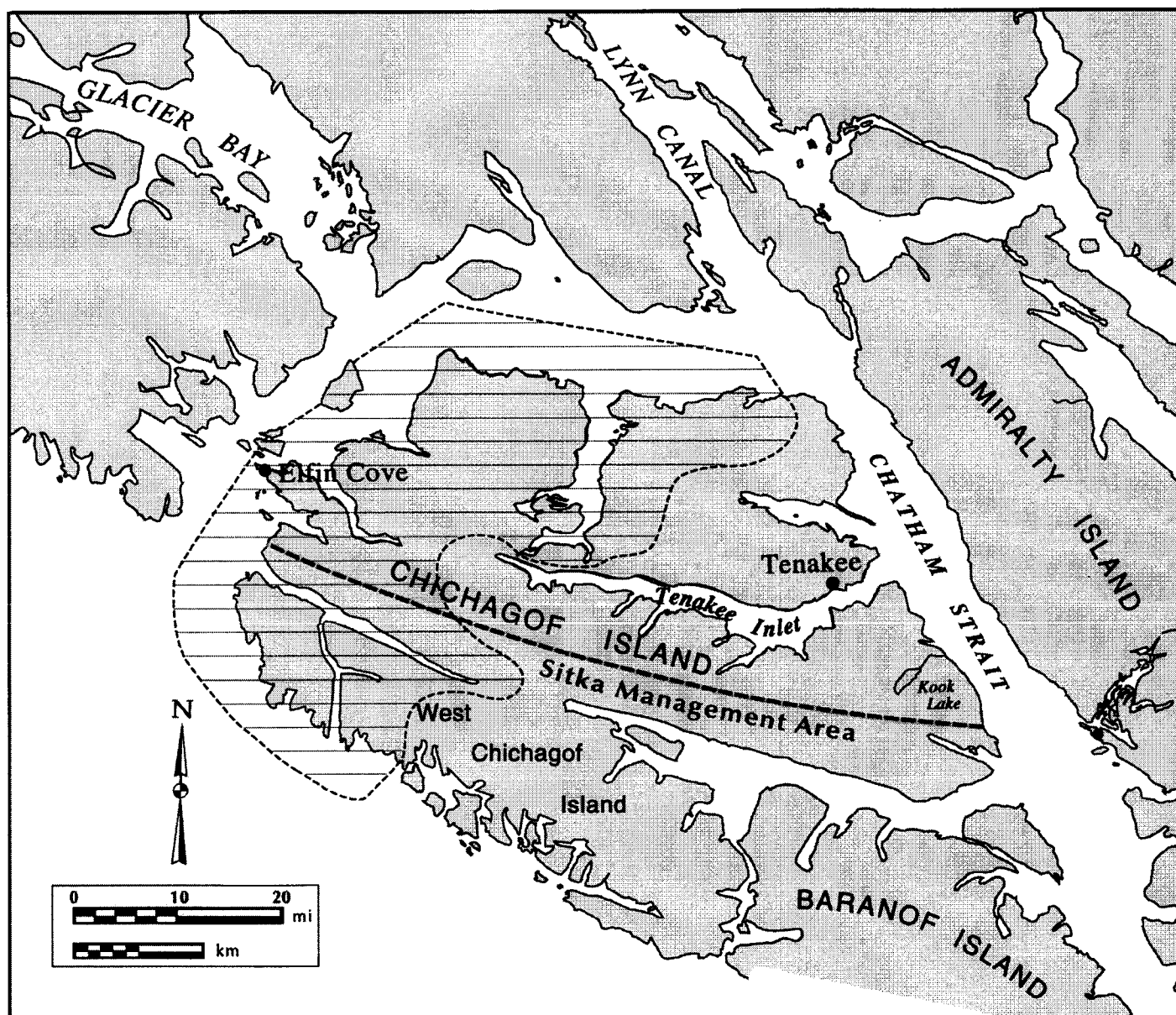


Figure 6.—Additional area (hatched) added to Glacier Bay SWHS area due to boundary line change implemented in 2000 survey.

AREA SPECIFIC PROGRAMS, ACTIONS AND ISSUES

KETCHIKAN AREA

The Ketchikan management area includes all freshwater and saltwater systems from the middle of the Cleveland Peninsula south to the Alaska/Canada border in Dixon Entrance (Figure 7). This area includes the communities of Ketchikan, Metlakatla, Meyers Chuck, and Hyder, and numerous islands—the largest of which are Revillagigedo, Annette, and Gravina. The major marine sport fisheries in the Ketchikan area are for chinook salmon, coho salmon, pink salmon, and bottomfish (Pacific halibut, rockfish, and lingcod). Major freshwater sport fisheries include steelhead, cutthroat trout, Dolly Varden, coho, pink, and sockeye salmon. Permanent Sport Fish management staff consists of a Fishery Biologist III, Stephen Hoffman, and an administrative assistant, Jody Goffinet, both stationed in Ketchikan.

Local Management and Research Programs

Marine Creel

The 2000 season marked the ninth year of expanded marine creel surveys in the Ketchikan area. Up to 4 technicians were employed between late April and the end of September to interview anglers at major harbors and boat launches for harvest information and collection of coded wire tag (CWT) data. Estimates generated from this study indicated that anglers harvested 3,521 chinook salmon, 14,778 coho salmon, 17,990 pink salmon, 3,296 chum salmon, 56 sockeye salmon, 6,039 Pacific halibut, 513 lingcod and 4,784 rockfish during 2000 (Hubartt et al. 2001). In addition, local anglers harvested 5,070 Dungeness crab and 156,990 shrimp. Overall, 2000 produced chinook and chum salmon harvests slightly above the 5-year average while coho salmon, sockeye salmon, Pacific halibut, rockfish and lingcod harvests were below the 5-year average for these species.

Salmon Research

Three major salmon research programs were active in the Ketchikan area in 2000. Chinook salmon research entailed inserting coded wire tags (CWTs) into juvenile chinook salmon prior to

leaving the Unuk River and adult mark-recapture studies on the Unuk and Keta rivers. The CWT studies were undertaken to determine fisheries interceptions and exploitation, while the mark-recapture studies were conducted to estimate total escapement. Coho salmon research on the Unuk River included marking of juvenile coho salmon with CWT's to determine fisheries interceptions and mark-recapture studies of returning adults to estimate total escapement into the drainage. Wild stock adult coho salmon CWT recoveries in the Naha River were also completed to determine fisheries interceptions and exploitation rates for this valuable wild stock.

Trout Research

No trout research occurred in this area in 2000 due to budget reductions.

Management Actions

Herring Cove Closure

The Herring Cove Special Harvest Area was closed to sport fishing from September 1 through September 30, 2000 (E.O. 1-31-00). This closure included Herring Cove Creek upstream of the bridge (which is already closed year-round), Herring Cove Creek downstream of the bridge, and that portion of Herring Cove bounded by a line from a point of land on George Inlet at the east side of Lot 39, USS 3397, bearing 18°12' to a point of land on the southern edge of Lot 91, USS 2403. This closure was implemented to protect hatchery coho salmon milling within this area which serve as the brood source for the Whitman Lake hatchery operated by Southern Southeast Regional Aquaculture Association (SSRAA) on upper Herring Cove Creek.

Ketchikan Creek Management

Ketchikan Creek was closed to sport fishing for all species from May 16 through September 14, 2000 by regulation. Poor returns of hatchery chinook and coho salmon coupled with only an average return of wild stocks of pink salmon prevented any summer time openings by E.O. to harvest hatchery fish.

Pink Salmon

The pink salmon bag limit in the Ketchikan area was maintained at 6 fish per day and 12 in

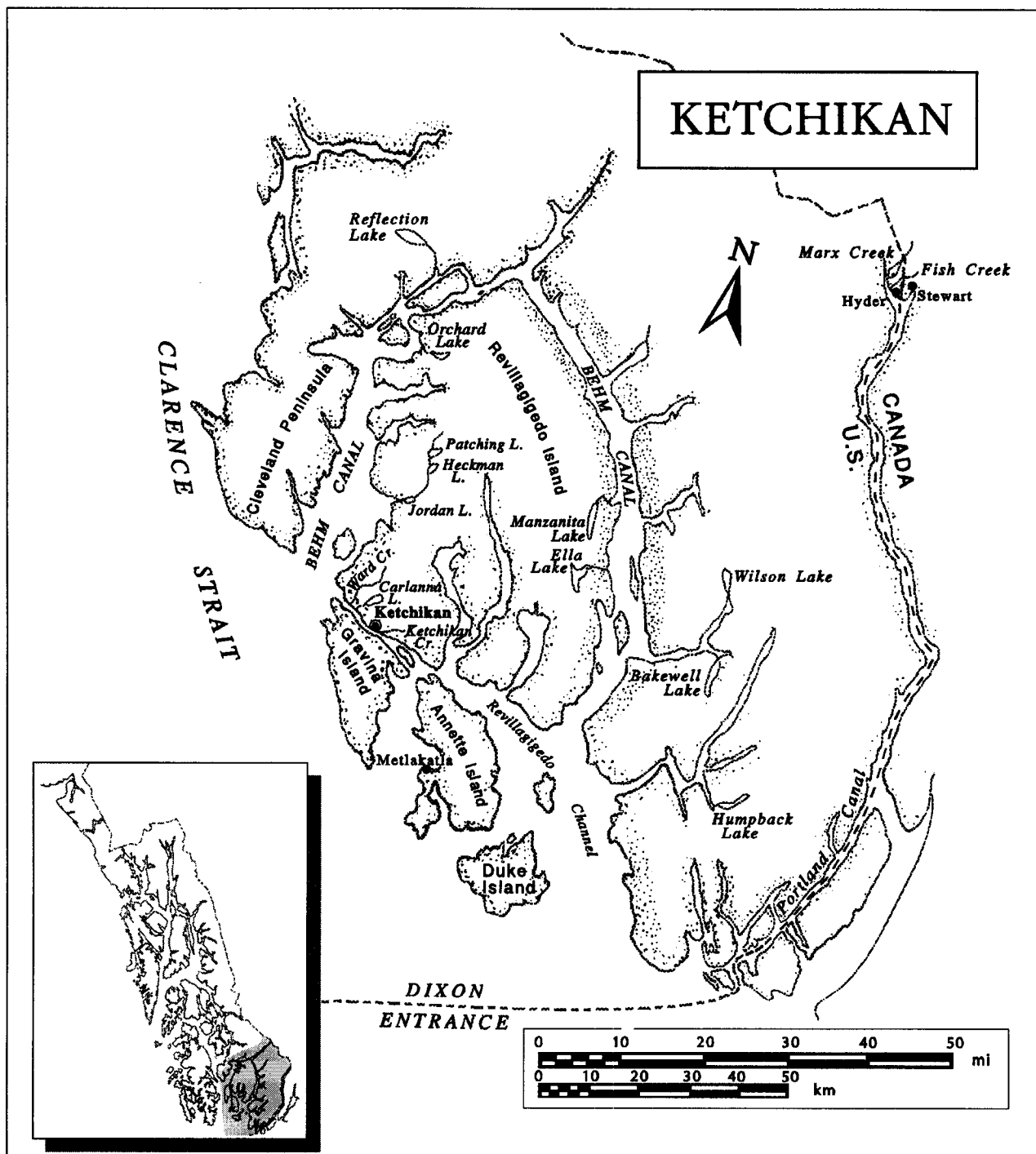


Figure 7.—Ketchikan management area.

possession. Only average returns of wild stock pink salmon prevented expansion of limits for this species.

Sockeye and Chum Salmon

The sockeye and chum salmon bag and possession limits in the Ketchikan area were maintained at 6 per day and 12 in possession. Average to slightly above average returns of these species precluded expansion of sport limits.

Chinook Salmon

The chinook salmon bag and possession limit was increased in two terminal fishery areas (Mountain Point and Neets Bay) near Ketchikan to harvest surplus hatchery produced fish from June 17 through August 1, 2000 (E.O. 1-13-00). The bag and possession limit was increased to 6 chinook salmon 28 inches or more in length and 12 chinook salmon less than 28 inches in length. In addition, the department implemented a personal use gillnet fishery for residents in the Herring Cove terminal harvest area 3 days per week between July 1 and July 31 (E.O. 1-19-00). This fishery was opened to harvest surplus chinook salmon returning to the Whitman Lake hatchery (operated by SSRAA) located on Herring Cove Creek. Drift gillnets 60 feet or less were allowed with a limit of 6 or more chinook salmon of any size.

Surveys

Salmon

Chinook salmon escapement surveys were conducted by helicopter and/or foot on several area index streams to obtain yearly trend comparisons (Table 2). Escapement surveys in Ketchikan area chinook salmon index streams indicated escapements were up on all four systems. Survey counts on the Unuk and Chickamin rivers were the highest since 1988 or 1989. The Blossom River was the only system which did not reach its escapement goal range in 2000.

Helicopter/foot/weir escapement surveys were also conducted on 18 of 19 coho salmon index streams in the Ketchikan area (Table 3). Coho salmon escapement counts in general were slightly above the 1996–2000 average (10 were above and 8 were below) in these index streams. High water hampered surveys in many streams.

Table 2.—Helicopter escapement survey peak counts of chinook salmon in Ketchikan area index systems, 1988–2000.

Year	Blossom	Keta	Unuk	Chickamin
1988	384	575	1,746	786
1989	344	1,155	1,149	934
1990	257	606	591	564
1991	239	272	655	487
1992	150	217	874	346
1993	303	362	1,068	389
1994	161	306	711	388
1995	217	175	722	356
1996	220	297	1,167	422
1997	132	246	636	272
1998	91	106	840	391
1999	212	276	680	492
2000	231	300	1,341	801
Lower goal	250	250	650	450
Upper goal	500	500	1,500	900

Steelhead

Research conducted on steelhead in the Ketchikan area in 2000 consisted of repetitive snorkel surveys of adult escapement in 4 index streams. These counts will be used to track escapement trends in area streams for any future in-season or Board of Fisheries actions (Table 4). Peak survey counts for 2000 in 3 of the index streams showed declines from 1999 totals while the peak count for Humpback Creek increased from 1999 but remained low in comparison to prior counts. Since snorkel surveys count a higher percentage of the total escapement, it can be misleading to compare 2000 data to foot counts made prior to 1997. High water interfered with completion of surveys in 2000.

Enhancement

Chinook salmon

This was the fifth year of a Cooperative Agreement (96-004) between ADF&G, Division of Sport Fish, and SSRAA to release chinook salmon smolts at their Neets Bay and Whitman Lake hatchery facilities. The goal of this agreement is to jointly finance the release of 650,000 chinook salmon smolts at Neets Bay (250,000

Table 3.—Peak helicopter, foot, or weir escapement survey counts of coho salmon in Ketchikan area streams, 1994–2000.

Stream name (survey type)	1994	1995	1996	1997	1998	1999	2000	2000 % of 5-year mean
Barrier Creek (H)	175	220	230	NS	50	25	72	77%
Blossom River (H)	775	800	829	1,143	1,004	598	1,354	137%
Carroll Creek (H)	475	400	240	140	24	425	275	130%
Choca Creek (H)	225	180	220	175	190	225	180	110%
Eulachon River (H)	755	435	383	420	460	657	600	119%
Fish Creek (Hyder) (F)	496	95	465	258	502	800	923	156%
Grant Creek (H)	220	94	92	30	130	127	94	99%
Herman Creek (H)	265	250	94	75	94	75	135	142%
Hugh Smith Creek (W)	1,679	1,758	964	732	1,129	1,238 ^a	684	72%
Humpback Creek (H)	560	82	440	32	256	520	102	38%
Humpy Creek (H)	155	185	80	NS	NS	107	50	63%
Indian Creek (H)	560	600	570	100	304	356	380	111%
Keta River (H)	1,100	1,155	1,506	571	1,169	1,895	1,619	120%
King Creek (H)	325	415	457	55	411	627	620	143%
Klahini River (H)	200	165	40	60	120	150	110	87%
Marten River (H)	2,205	1,385	1,924	759	1,961	1,518	1,421	94%
McDonald L (Hatchery Cr.) (F)	381	561	335	552	710	258	250	59%
Reflection L (Upper Short Cr.) (H)	116	42	312	NS	71	NS	NS	
Tombstone River (H)	850	2,446	1,806	847	666	840	1,672	143%
	Mean							106%

H = helicopter, F = foot, W = weir, NS = not surveyed.

^a Incomplete weir count because of extended high water in 1999.

Table 4.—Annual peak steelhead escapement counts for Ketchikan area streams, 1994–2000. The 1994–1996 surveys were by foot while the 1997–2000 surveys were snorkel surveys.

Stream	1994	1995	1996	1997	1998	1999	2000	% change 1999 to 2000
White River	12	77	42	84	86	60	38	-37%
Ketchikan Creek	NS	16	42	48	47	19	15	-21%
Naha River	15	33	37	20	31	49	NS	-
Ward Creek	NS	NS	NS	10	41	NS	NS	-
McDonald Lake	67	66	60	145	86	100	47	-53%
Humpback Creek	30	27	20	91	24	4	7	+75%

NS = not surveyed

from SSRAA plus 400,000 from the Division's Crystal Lake Hatchery in Petersburg) and 760,000 at Whitman Lake (SSRAA produced fish) to enhance local sport and commercial fisheries. In 2000, 643,000 smolts were released at Neets Bay and 780,000 at Whitman Lake. Adult returns from these releases will begin in the year 2002 when 2 ocean adults (\approx 28 inches in length) will return followed by increased returns of 3-ocean fish in 2003, 4-ocean in 2004, and 5-ocean in 2005.

In addition to the chinook salmon releases from this project, the Deer Mountain hatchery owned and operated by Ketchikan Indian Corporation (KIC) released 90,000 chinook salmon smolts into Ketchikan Creek as part of its ongoing hatchery program. No divisional funds were used to pay for this project.

The Metlakatla Indian Corporation (MIC) operates the Tamgas Hatchery located on Annette Island Reserve south of Ketchikan. This facility releases 1.2 million chinook smolts each year to enhance island fisheries. The releases from this facility are also a significant contributor to off island fisheries such as the Ketchikan sport fishery. No divisional funds were used to fund this project.

Coho and Chum Salmon

The Division is not involved in either coho or chum salmon enhancement in the Ketchikan area. SSRAA released over 3.4 million coho salmon at its Neets Bay and Whitman Lake facilities in 2000. Ketchikan Indian Corporation also funded releases of approximately 78,000 summer run coho salmon in Ketchikan Creek and 79,000 in Ward Lake. MIC's Tamgas hatchery on Annette Island released over 6.8 million coho salmon smolts paid for by MIC funding. All three of these programs benefit commercial and sport fisheries in the Ketchikan area. SSRAA also released 43.1 million summer-run and 39.1 million fall-run chum salmon at its Neets Bay facility in 2000. Chum returns from 1996–1997 releases were good, and sport fishermen in the local area benefited from these releases.

Rainbow Trout and Steelhead

The Division is not involved in either rainbow trout or steelhead enhancement in the Ketchikan

area other than to provide triploid rainbow trout eggs to KIC. These eggs are shipped to the Deer Mountain Hatchery where KIC raises them for release in the Ketchikan Creek City Park Kids Day fishery and to enhance the sport fisheries in Carlanna and Harriet Hunt lakes. In 2000, KIC released 2,000 triploid rainbows in the City Park Kids Fishing Day project, plus almost 5,000 in Harriet Hunt Lake and 5,000 fish in Carlanna Lake. KIC did not release any steelhead smolts in Ketchikan Creek in 2000 due to a lack of brood stock in 1999.

Access Projects

In 2000, Ketchikan area staff were involved in review and/or development of one boat ramp project, one trail project, and one fishing pier project (Table 5).

Other Issues

Hydroelectric Projects

Division staff reviewed and made field inspection trips to five different hydroelectric projects in 2000 (Table 6). Considerable staff time was spent reviewing these projects, attending interagency meetings, and working with consultant firms involved with these projects.

Timber Harvest

Logging activities continued to be planned or implemented in the Ketchikan area during 2000 (Table 7). Twelve different timber harvest plans were reviewed and comments provided to Habitat Division staff concerning potential impacts on various freshwater sport fisheries.

Federal Subsistence Fishery Management

The federal government officially assumed management of freshwater systems on federal lands in 2000. To date, Ketchikan area residents, with the exception of west Saxman residents, are considered urban and therefore not eligible to participate in federal subsistence fisheries. Federal management of freshwater systems in the Ketchikan area in 2000 did not result in any restrictions on other user groups. Future action by the federal government is anticipated to change this with restrictions on urban and nonresident sport fishermen anticipated.

Table 5.—Ketchikan area access projects, 2000.

City/ Borough	Project title	Amenities	Type ^a	Funding status	Cost	Status
Hyder	Hyder Boat Launch Improvements	Marine ramp, parking, float	B	FY 98	\$100,000	delayed until 2001
Ketchikan	Herring Cove Access Improvements	Trail	N	FY 99	\$174,000	on hold
Ketchikan	Thomas Basin Fishing Pier	Fishing dock	N	FY 99	\$100,000	on hold

^a B = boating, N = non-boating

Table 6.—Hydroelectric projects in the Ketchikan area, 2000.

Name	Status	Species of concern
Ketchikan Lakes	Re-licensed with state and federal stipulations.	All species of salmon; steelhead; rainbow, brook, and cutthroat trout; and Dolly Varden in lake.
Connell Lake	1 st stage consultation. ADF&G drafting study needs.	All species of salmon; steelhead; rainbow and cutthroat trout; Dolly Varden.
Whitman Lake	1 st stage consultation. ADF&G drafting study needs.	Dolly Varden, cutthroat trout
Mahoney Lake	Correctly licensed, awaiting construction, compliance monitoring.	Sockeye, coho, pink, and chum salmon; steelhead; rainbow and cutthroat trout. Arctic grayling in upper Mahoney Lake
Swan Lake	Currently licensed, fisheries monitoring studies under review.	Dolly Varden, kokanee, cutthroat trout

Table 7.—Ketchikan area timber harvest plans, 2000.

Name	Status
N. Revillagiedo Island	Timber harvest continuing
Upper Carroll Inlet	Timber sales released. Road construction started.
Sea Level – Thorne Arm	FEIS completed; sales being released
Emerald Bay	In USFS planning stage; ROD out soon
Gravina Island	In USFS planning stage; DEIS out soon
Licking Creek (Carroll Inlet)	Scoping began in 2000
Knot (salvage sale – Carroll Inlet)	EA completed
Several DNR timber sales	In planning phase
Ketchikan Gateway Borough	Timber sale completed; roads to be “put to bed soon”
Sea Alaska – Cleveland Peninsula	In planning phase; LTF permit renewed
Salty Timber Sale (USFS – George Inlet)	EA completed, sale area active
Mahoney Lake (Cape Fox Corp.)	Road constructed; logging completed 12/99, except for helicopter units
Clover Passage (Cape Fox Corp.)	Road construction beginning.
Rainbow Creek (Cape Fox Corp.)	Roads constructed; logging completed 8/99, except for helicopter units

PRINCE OF WALES AREA

The Prince of Wales Island (PWI) management area includes all freshwater systems draining Prince of Wales Island and a number of adjacent smaller islands (Figure 8). The major marine fisheries of the area are for chinook salmon, coho salmon, pink salmon, and bottomfish (Pacific halibut, rockfish, and lingcod). Major freshwater sport fisheries include steelhead, cutthroat trout, Dolly Varden, coho salmon, pink salmon, and sockeye salmon. Permanent Sport Fish management staff consists of one Fishery Biologist II, Robert Chadwick, stationed in Klawock.

Local Management and Research Programs

Marine Catch Sampling

A marine CWT sampling project was operated for the eighth season on the west coast of PWI. Two technicians sampled harbors, boat launches, and lodges in Craig and Klawock from late April through mid-September to collect CWT information from salmon harvests of charter and non-charter anglers returning to port in these locations. Harvest estimates for the various important species caught in marine waters off PWI are derived from the Statewide Harvest Survey (SWHS) and only in-season CWT and fishery performance data are collected by the technicians. Coded wire tag data collected in 2000 indicated that 62% of the chinook salmon caught were from non-Alaskan hatcheries (primarily Canada) and less than 4% from Alaska hatcheries. Hatchery coho salmon comprised 29% of the harvest with about 20% from the local Klawock hatchery and most of the rest from other Alaska hatcheries. Both the chinook and coho fisheries were about average.

Trout Research

In anticipation of future trout research on Klawock Lake, sampling was conducted during November and December to investigate hoop trap catch rates for cutthroat trout during the winter. Trap catch rates averaged over 10 cutthroat trout per trap day during November and December.

Management Actions

In 2000, one emergency order was enacted specific to the PWI area. Bait use was allowed in

the Klawock River below regulatory markers 1/2 mile downstream of Klawock Lake from September 15 through November 15 (E.O. 1-33-00). Angler opportunity for harvest of surplus hatchery coho salmon increased due to this action.

2000 Board of Fisheries Regulation Changes

The BOF placed the Klawock Lake and Sweetwater Lake drainages, along with Control Lake, into the "High-use" trout regulation category where rainbow and cutthroat trout (in combination) regulations are: 2 daily, 2 in possession, 14-inch minimum size limit and 22-inch maximum size limit. Only unbaited, artificial lures may be used year-round.

The BOF did not pass a proposal to allow bait in the Klawock River from August 15 to September 30. However, when a surplus of coho salmon return to the Klawock Hatchery, the department will open a portion of the lower Klawock River to the use of bait by E.O. (as was done in 2000).

Escapement Surveys

Coho Salmon

Coho salmon escapements into 5 PWI streams were monitored by means of foot or helicopter surveys (Table 8). Multiple foot surveys were conducted on "108" Creek, Shaheen Creek, Port St. Nicholas Creek, and Harris River. As coho escapement counts began to peak, both the Maybeso River and the Harris River were surveyed by helicopter. Only escapement counts in "108" Creek were below the 5-year average. Concern for effects of the easy access to the falls on "108" Creek and the nearby coho enhancement project at Neck Lake have prompted plans for increased monitoring and enforcement at 108 Creek in 2001.

Steelhead

Weekly snorkel surveys in two index streams (Harris River and Eagle Creek) were objectives of the PWI steelhead research project in 2000 (Table 9). Information derived from these surveys are used to monitor trends in area streams for any future inseason or BOF actions. Since snorkel surveys count a higher percentage of the total escapement, it can be misleading to compare

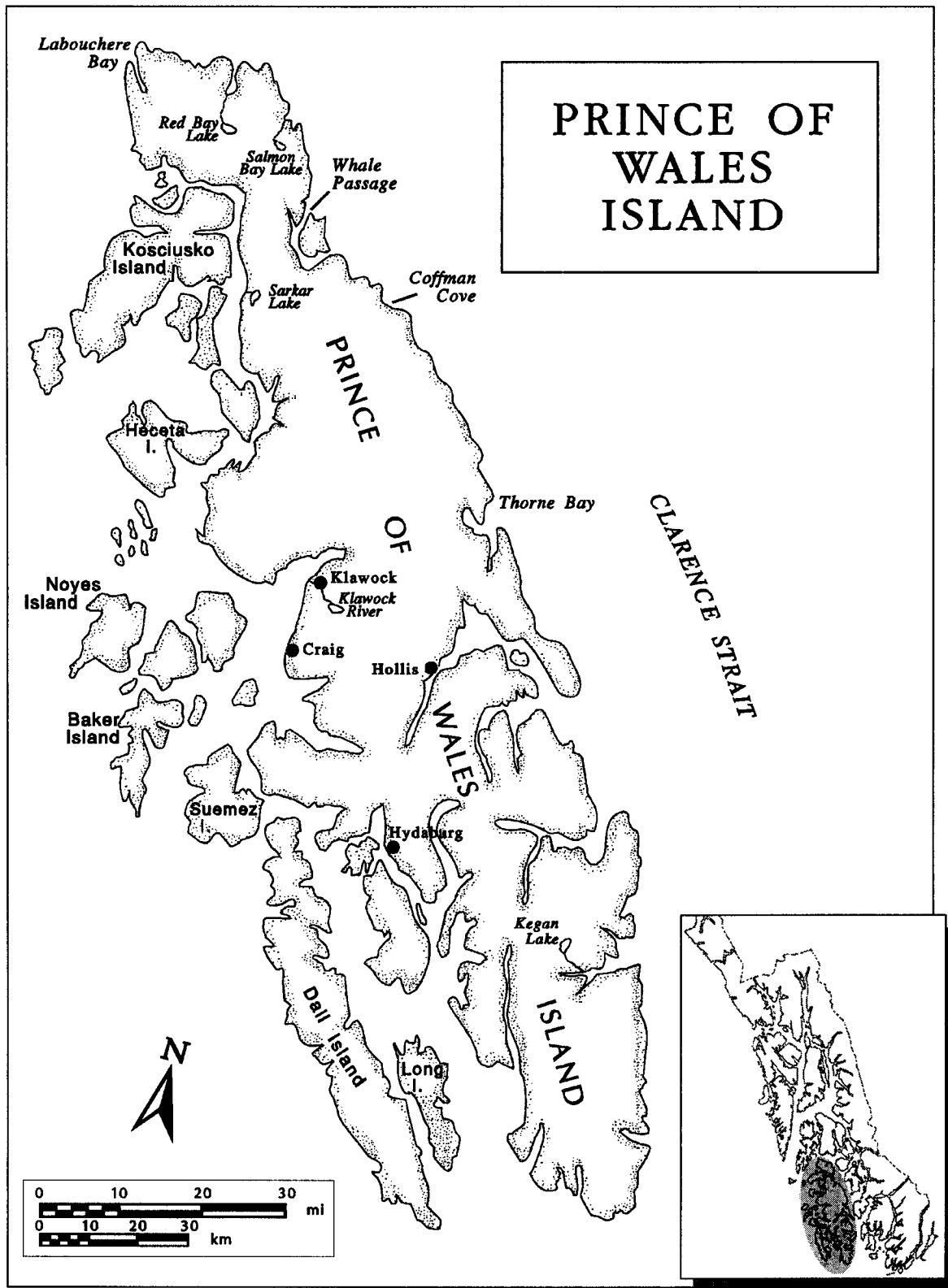


Figure 8.—Prince of Wales Island management area.

Table 8.—Peak helicopter or foot escapement survey counts of coho salmon in Prince of Wales area streams, 1995–2000.

Stream name (survey type)	1995	1996	1997	1998	1999	5-yr mean (95–99)	2000	2000 % of mean
“108” Creek (F)	60	601	163	242	163	246	151	61%
Harris River (H)	670	483	NS ^a	839	321	578	851	147%
Maybeso River (H)	232	221	NS	81	183	179	186	103%
Port St. Nicholas Creek (F)	49	32	53	52	54	48	55	114%
Shaheen Creek (F)	12	193	63	153	155	115	135	117%

H = helicopter, F = foot

^a NS = not surveyed.

Table 9.—Annual peak steelhead escapement counts for Prince of Wales Island area index systems, 1995–2000. The 1995–1996 surveys were by foot or weir while the 1997–2000 surveys were snorkel surveys.

Index system	1995	1996	1997	1998	1999	5-yr mean (95–99)	2000	2000 % of mean
Eagle Creek	21	17	90	56	118 ^a	60	82	136%
Harris River	44	67	104	156	192	113	79	69%

^a Eagle Creek closed to fishing due to low early snorkel counts and illegal harvest of steelhead early in the season during 1999.

Table 10.—Prince of Wales area 2000 boating access projects.

City/borough	Project title	Amenities	Funding	Cost
Hollis	Hollis Boat Launch Ramp Improvements	Marine ramp, parking	FY 98	\$150,000
Klawock	Klawock Lake Boat Launch	Fresh water ramp, parking	FY 01	\$50,000

2000 data to foot counts made prior to 1997. The Harris River peak count in 2000 was lower than the 5-year average as were most steelhead counts in Southeast Alaska. The Eagle Creek peak count, however, was higher than average.

Enhancement

The department was not involved in enhancement on PWI in 2000. The Prince of Wales Island Hatchery Association (POWHA) which operates

the Klawock Hatchery released 435,742 coho salmon smolts, 359,431 sockeye salmon smolts, and 3,400 steelhead smolts in 2000. A total of 32,174 coho and 9,428 sockeye salmon returned to Klawock Lake. These fish were paid for with POWHA grant funds. SSRAA released 1,695,318 pre-smolt coho salmon into Neck Lake using their own funds. A total of 24,942 coho salmon returned to Neck Lake outlet from the 1998 SSRAA release. Anglers utilized coho salmon

returning to Neck Lake outlet in the salt water. Unlike most areas of Southeast Alaska, no enhancement of chinook salmon took place on PWI in 2000.

Access Projects

The Hollis boat ramp improvements have been delayed by the Alaska Department of Transportation pending possible relocation of the ramp to Clark Bay (Table 10). Site visits and meetings with USFS were conducted regarding the Klawock Lake boat ramp project to discuss the design, cooperative agreements, and the NEPA process.

Habitat Issues

Water Use Projects

PWI sport fish staff spent considerable time in 2000 reviewing and making field inspections of several operational and proposed hydroelectric projects on PWI. Staff time was spent conducting field inspections at the operational Black Bear Lake hydro project, proposed Three Mile Creek Klawock City Water project, and proposed sites for projects at Wolf Lake, Reynolds Creek, and the south fork of Black Bear Creek. Numerous inter-agency meetings concerning these projects were also attended.

Timber Harvest

Eleven different timber harvest plans were reviewed by sport fish staff in 2000 (Table 11). Division staff provided comments on these projects through PWI ADF&G Habitat Division.

Table 11.—Prince of Wales area timber harvest plans, 2000.

Name	Managing agency
Polk Small Sales	USFS
Kosciusko Sale	USFS
Polkapillar Timber Sale	USFS
Tuxekan Sale	USFS
State Mental Health 5-year schedule of timber sales	DNR
Thorne Bay/State Mental Health	DNR
Port Caldera	STC
Kina Cove	STC
Soda Bay	STC
Klawock North	KHC
Trocadero	SSI

USFS = U.S. Forest Service

DNR = Alaska Department of Natural Resources

STC = Sealaska Timber Corporation

KHC = Klawock Henya Corporation

SSI = Shaan Seet Incorporated

Road Construction

Sport fish staff continued monitoring the federal highway Big Salt Road project in 2000 (17 miles of realignment and paving). Amendments to the project plan for the realignment of the Coffman Cove road were reviewed by staff and comments were submitted. Many bridge and culvert crossings were monitored throughout the year.

PETERSBURG/WRANGELL AREA

The Petersburg/Wrangell management area includes the islands of Kuiu, Kupreanof, Mitkof, Zarembo, Etolin, and Wrangell and all mainland waters in the vicinity of these islands (Figure 9). The area's major sport fisheries occur in marine waters for chinook and coho salmon along with bottomfish (Pacific halibut and rockfish). The major freshwater sport fisheries include chinook and coho salmon, steelhead, cutthroat trout, and Dolly Varden. Permanent Sport Fish management staff consists of one Fishery Biologist III, Dean Beers, stationed in Petersburg.

Local Management and Research Programs

Salmon

Salmon management and research plans focused primarily on wild chinook salmon stocks from the Stikine River and local chinook salmon releases from Crystal Lake Hatchery at Blind Slough near Petersburg. Sport fisheries target wild stocks during late May and early June while hatchery returns peak near the end of June and early July.

The Stikine River is one of the 2 largest producers of chinook salmon in Southeast Alaska (Pahlke 1997). To track rebuilding efforts, a cooperative program that began in 1996 continued in 2000 between Sport Fish Division, the Canada Department of Fisheries and Oceans, and the Tahltan Band to estimate escapement and inriver harvest rate of Stikine River chinook salmon. So far, results from the study estimated that a spawning abundance of 17,368 large chinook salmon would, on average, produce maximum sustained yield. A new escapement range of 14,000 to 28,000 large spawners was developed by the department (Bernard et al. 2000). In 2000, additional stock assessment programs using CWT's were initiated to determine marine survival, smolt abundance, exploitation rate and production of both chinook and coho salmon.

Crystal Lake Hatchery chinook salmon returns are allocated between commercial and sport user groups by the Wrangell Narrows-Blind Slough Terminal Harvest Area Management Plan (5 AAC 33.381) (Table 12). At low projected levels of returns, the entire run (in excess of those needed

for egg takes) is allocated to the sport fishery. In 2000, 5,100 adult chinook salmon were allocated to the marine boat fishery, shoreline fishery, and broodstock maintenance; the commercial fishery was allocated 1,100 chinook salmon. About 1,000 chinook salmon are required for broodstock maintenance to meet release goals at Blind Slough (600,000 smolts) and Earl West Cove (400,000 smolts). Both releases are Andrew Creek broodstock.

The hatchery also maintains a small coho release program using Crystal Creek stock to mitigate the loss of coho salmon spawning habitat from Crystal Creek due to hatchery construction; the release goal is 100,000 coho smolts each year (Table 13).

A dockside monitoring program (creel survey) to document Alaska hatchery chinook salmon contributions and track local catch rates in both Petersburg and Wrangell was continued in 2000 as part of the regionwide inseason chinook salmon management program (Table 14). Additional sampling (mid-July to early September) was added in 2000 to include coho salmon and Pacific halibut.

A stock assessment program for coho salmon at Slippery Creek on Kuiu Island that began in 1999 continued in 2000. This project is a cooperative project with the U.S. Forest Service and is one of several coho stock assessment programs ADF&G is developing to provide timely data about run strength for inseason management.

In the spring of 2000, 12,321 coho salmon smolts were coded wire tagged below the lake outlet and sampled for age, length and weight. The adult escapement of coho salmon was monitored in the fall to document the 1999–2000 smolt to adult run; and 411 fish were counted by the fish pass, of which 149 were missing adipose fins. A Fishery Data Series report titled "Production of coho salmon from Slippery Creek, 1999–2000" will be published in 2001.

Trout

At a public meeting, the Wrangell Advisory Committee informed the department that they would seek to liberalize regulations on steelhead and cutthroat trout through the federal subsistence regulatory process.

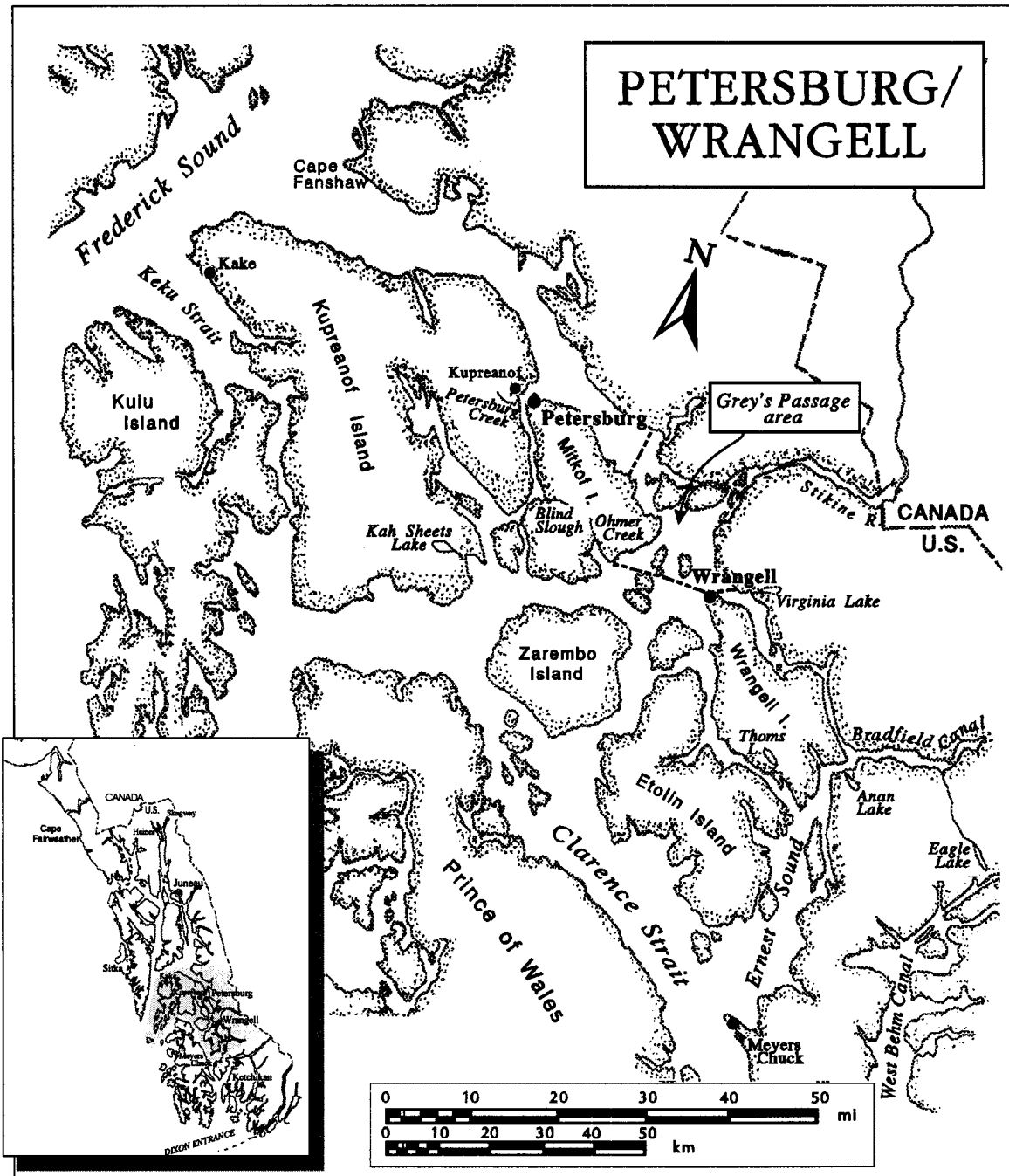


Figure 9.—Petersburg/Wrangell management area.

Table 12—Contributions of Crystal Lake hatchery chinook salmon to sport and commercial fisheries, 1995–2000.

Year	Sport				Commercial			Percent sport
	Mixed saltwater boat ^a	Terminal saltwater boat ^b	Terminal shoreline ^c	Sport total	Mixed stock ^d	Terminal ^e	Commercial total	
1995	465	737	391	1,593	2,923	1,165	4,088	28%
1996	474	1,867	672	3,013	3,807	1,933	5,740	34%
1997 ^f	280	851	1,204	2,335	1,307	801	2,108	53%
1998	257	968	774	1,999	1,181	0	1,181	63%
1999	190	1,935	2,343	4,468	1,782	268	2,050	69%
2000	476	2,563	2,000	5,039	2,316	1,329	3,645	58%

^a Estimated from regionwide dockside creel sampling programs.

^b Statewide harvest survey (includes adult and jack chinook salmon) estimate.

^c Statewide harvest survey (includes both freshwater and estuary/saltwater shoreline adult and jack chinook harvest) estimate.

^d Estimated from regionwide commercial port sampling programs.

^e Fish ticket information.

^f First year under the Wrangell Narrows/Blind Slough Terminal Harvest Area Management Plan.

Table 13.—Contributions of Crystal Lake hatchery coho salmon to sport and commercial fisheries, 1995–2000.

Year	Sport				Commercial total ^d	Personal use total ^e	Percent sport
	Mixed saltwater boat ^a	Terminal saltwater boat ^b	Terminal shoreline ^c	Sport total			
1995	0	704	915	1,619	975	198	58%
1996	37	604	128	778	1,884	105	28%
1997	158	147	384	805	2,202	177	25%
1998	0	66	167	248	1,185	170	16%
1999	39	1,270	415	570	5,365	115	9%
2000	48	21	480	549	3,173	148	14%

^a Estimated from regionwide dockside creel sampling programs.

^b Statewide harvest survey estimate.

^c Statewide harvest survey (includes both freshwater and estuary/saltwater shoreline harvest) estimate.

^d Estimated from regionwide commercial port sampling programs.

^e Personal use harvest reports.

Management Actions

A return of 6,200 chinook salmon was forecast for the terminal waters of Wrangell Narrows which encompasses waters in section 6A south of 56° 46' N. latitude (Martinsen's dock) and east of the longitude of the northern tip of Woewodski

Island. Under the Wrangell Narrows-Blind Slough Terminal Harvest Area Management Plan, the terminal waters of Wrangell Narrows were opened by emergency order to a bag limit of 4 chinook salmon 28 inches or larger and 8 chinook salmon less than 28 inches in length from June 1 through July 31 (E.O. 1-06-00). The freshwater portion of

Table 14.—Sampled effort and harvest (effort or harvest during times sampled only) statistics from the Petersburg and Wrangell marine boat catch sampling programs in 2000.

	Petersburg	Wrangell ^a
Sampling period ^b	4/24–9/10	4/24–9/10
Angler-hours of salmon fishing	3,178	6,342
Chinook salmon harvested	249 ^c	211
Chinook salmon sampled ^d	237	185
Chinook salmon CPUE (hrs/fish)	12.8	30.1
Coho salmon harvested	78	65
Angler-hours of bottomfishing	7,315	4,138
Pacific halibut harvested	1,567	419
Rockfish harvested	149	111

^a No sampling conducted June 3–26, 2000.

^b Sampling conducted 5 days per week by one sampler working 7-h shifts.

^c In addition, at least 346 chinook salmon were taken during the Petersburg Salmon Derby, all of which were sampled for missing adipose fins.

^d Fish were sampled for presence or absence of adipose fins, and heads were collected from fish with missing adipose fins.

the chinook sport fishery in Blind Slough is open all year. The sport bag limit in this area was increased to 4 chinook salmon 28 inches or larger and 4 chinook salmon less than 28 inches. Bait was allowed in Blind Slough beginning June 15, and salmon hooked elsewhere than in the mouth could be retained.

Surveys

Sport Fish staff were only responsible for adult steelhead surveys while Commercial Fisheries staff conducted coho salmon surveys.

Petersburg Creek

Four weekly snorkel surveys for adult steelhead were conducted during the month of May. A peak

count of 42 fish was observed on May 10 under normal visibility and average water conditions.

Marten Creek

In 2000, the Marten Creek steelhead surveys ended as it was believed that low escapements (peak counts of 14 to 18 fish) made it a poor site to use as an abundance index for the region. It was determined that Slippery Creek would provide a better index of abundance. Three weekly snorkel surveys for adult steelhead were conducted during the month of May. A peak count of 42 fish was observed on May 18 under excellent visibility and low water conditions.

Access Projects

Designs to replace the boat ramp and add more parking for sport anglers at South Harbor in Petersburg were finalized in the spring and construction began in the fall of 2000. Construction was expected to be done by the following spring.

Other Issues

Subsistence

A federal subsistence proposal to close steelhead sport fisheries at Kadake Creek and Hamilton River was passed by the federal subsistence Regional Advisory Committee in October. Sport Fish Division's response was that there is no justification for this expansion of federal authority into this state managed fishery. There is virtually no harvest of steelhead by sport fishermen from these streams, there has been no determination of the level of subsistence need, the level of sustainable harvest from these streams has not been determined, nor has there been a determination that subsistence needs are not being met. Operational plans were submitted to operate and maintain a weir at Kadake Creek in 2001 to monitor steelhead harvest and escapement to develop a stock assessment plan.

Crystal Lake Hatchery

On July 1, 2000 Southern Southeast Regional Aquaculture Association (SSRAA) took over operation of Crystal Lake Hatchery, which was the last state owned and operated hatchery facility in Southeast Alaska. The hatchery was eventually

fully funded for FY2001, including some U.S./Canada treaty funds for the first time. Chinook salmon production levels were expected to remain the same, although the Earl West Cove chinook release site was dropped in favor of Burnett Inlet to begin in 2001.

Habitat

The City of Petersburg continued the relicensing of the Blind Slough Hydroelectric Project (FERC Project No. P-201-AK); and meetings and teleconferences were held with the aquatic resources group to determine what studies were necessary to provide adequate water supplies for fish and wildlife. Critical fisheries issues included maintaining adequate flows to sustain Crystal Lake Hatchery, Crystal Creek, and Blind River. Aquatic studies were performed to determine if output from the project could improve environmental conditions below Crystal Creek to aid chinook salmon returning to Crystal Lake Hatchery. Several times during the 1990's, low flows and high temperatures (low dissolved oxygen) combined to kill large numbers of chinook salmon (up to 1,500) and threaten broodstock recovery programs.

The Sunrise Lake Water Supply and Hydroelectric Project on Woronkofski Island (near Wrangell) remained on hold while the City of Wrangell determines if they want to fund environmental studies necessary for licensing.

SITKA AREA

The Sitka management area includes all waters of Baranof Island, Yakobi Island, and Chichagof Island west of a line extending from Point Hayes to Column Point (Figure 10). Sitka (about 8,000 residents) is the only large community located within the Sitka Management Area. Smaller communities include Pelican, Baranof Warm Springs and Port Alexander. The Sitka management area provides about 20% of the sport fishing effort in Southeast Alaska. Permanent Sport Fish management staff consists of one Fishery Biologist III, Thomas Brookover, stationed in Sitka.

The Sitka area supports one of the largest marine sport fisheries in Southeast Alaska. In 1998, more chinook salmon, coho salmon, Pacific halibut, and

rockfish were harvested in Sitka than in any other management area in Southeast Alaska. Harvests near Sitka of lingcod and each species mentioned above were the second largest in Alaska.

In 1999, marine angling comprised 92% of the sport fishing effort in the Sitka area. Marine sport fishing effort in the Sitka area has increased more rapidly than most other areas in Southeast Alaska, from about 40,000 angler-days in 1980 to over 105,000 in 1999. In contrast, freshwater fishing effort in the Sitka area increased from about 6,000 angler-days in 1987 to 8,400 angler-days in 1999.

Much of the recent increase in marine fishing effort is guided. Distribution of reported logbook effort and harvest in 2000 (Table 1) indicated that the Sitka area was the most heavily used area in Southeast Alaska by charter anglers (about 30% of salmon charter fishing effort and 35% of bottomfishing charter effort). Guided anglers took 72%, 86% and 90% of the chinook salmon, coho salmon, and Pacific halibut harvested in the portion of the Sitka marine boat sport fishery monitored by creel surveys during 2000.

Local Management and Research Programs

Marine Creel

Since 1992, a marine creel survey has been conducted in Sitka as part of an expanded regional program to monitor sport harvests of chinook salmon in Southeast Alaska. Primary goals of the program are to estimate inseason regionwide harvests of chinook salmon, chinook salmon of Alaska hatchery origin, and coho salmon of Alaska hatchery origin in the Ketchikan, Juneau and Sitka fisheries. Additional tasks include estimating angler effort, harvest and catch of all Pacific salmon species, Pacific halibut, lingcod, rockfish and Dolly Varden; harvest per unit effort (HPUE) for chinook and coho salmon and Pacific halibut; and average weights of Pacific halibut and lingcod harvested in the above fisheries. Five technicians were employed to conduct the creel survey of the Sitka marine boat fishery from April 24 to September 24, 2000.

Catch rates for chinook salmon in the Sitka marine fishery were about average throughout the 2000 season, except during April and early May,

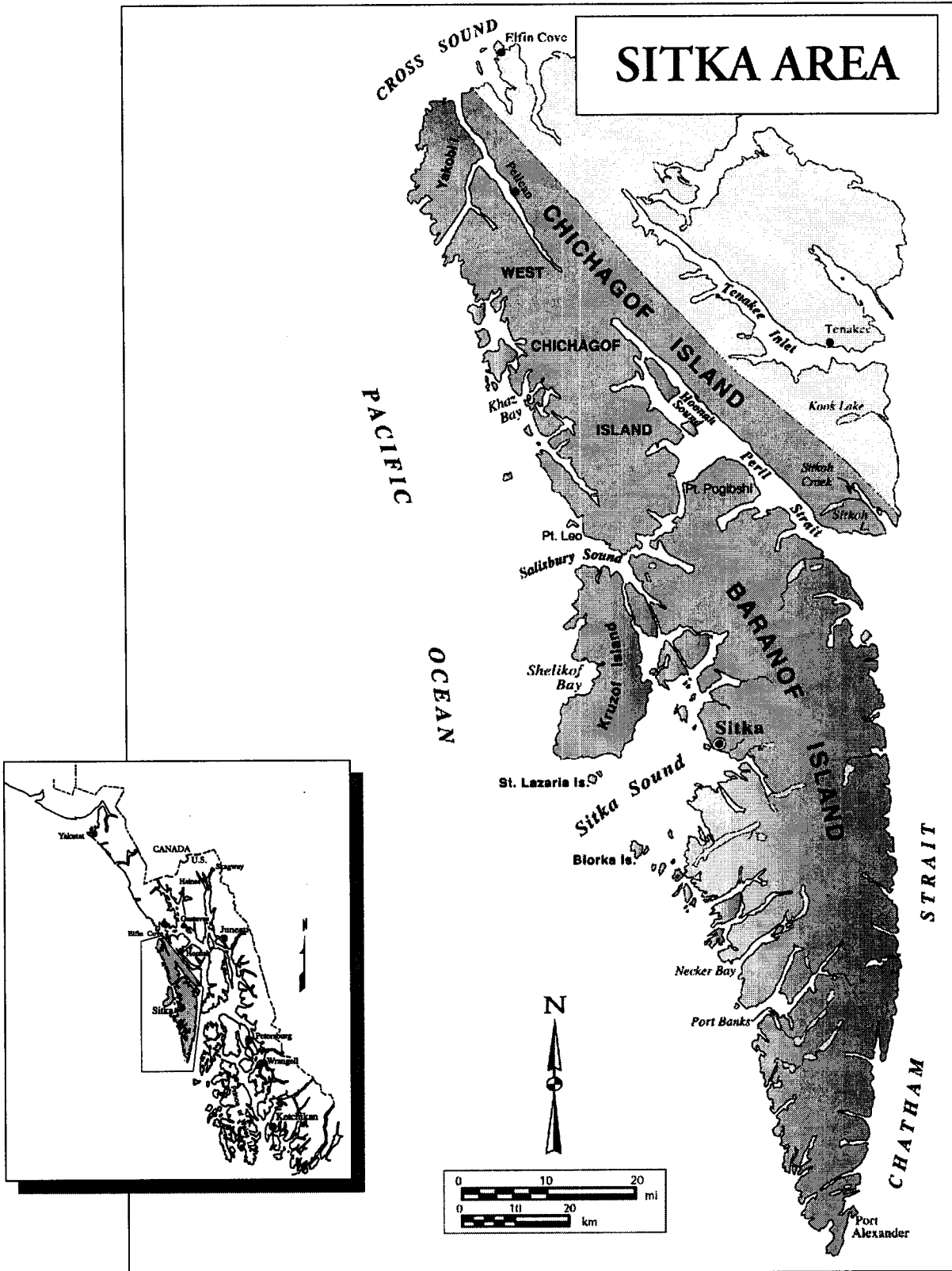


Figure 10.—Sitka management area.

when catch rates were above average. Sport anglers took an estimated harvest of 17,230 chinook salmon in the Sitka marine sport fishery. This is down 17% from 1999 and is 8% below the recent 5-yr average, but still represents the fourth largest harvest in the Sitka sport fishery. Contributions of both Alaska and non-Alaska hatchery stocks were down in 2000. Alaska hatcheries contributed about 9% of the harvest compared to the recent 5-year average of 17%. This contrasts with inside fisheries near Juneau and Ketchikan, where contributions of Alaska hatchery stocks were 25% above the recent 5-year average. Non-Alaska hatcheries contributed about 21% of the Sitka chinook harvest.

Coho salmon began to show in the Sitka fishery about two weeks later than average, but catches quickly improved through July reaching an average peak in mid-August, then dropped off more quickly than normal. Anglers averaged one fish or more per angler-hour from July 31 through August 13, but, overall, catch rates were about 50% lower than 1999 catch rates and 8% lower than the recent 5-year average. Estimated harvest of coho salmon in the 2000 Sitka marine fishery (38,247) was down about 50% from the record harvest in 1999, and was 13% less than the recent 5-year average. The hatchery contribution was 19% and almost entirely composed of Alaska hatchery production. Neets Bay hatchery (located near Ketchikan) stocks were again taken in large numbers, and accounted for 43% of the hatchery fish and 8% of all coho salmon taken near Sitka.

Most sport fishing effort for bottomfish was directed at areas outside of Sitka Sound. Catch rates for Pacific halibut were slightly higher relative to previous years and sporadically exceeded average levels from mid-May through August, when catch rates averaged about two angler-hours per halibut kept. High catch rates were due at least partially to a continuing shift in effort from areas inside Sitka Sound to areas outside of Sitka Sound.

Redoubt Lake and Bay Creel Survey

Redoubt Lake is a meromictic lake located at the head of Redoubt Bay on the west side of Baranof Island, 10.7 km south of Sitka. No other meromictic lake is known to approach Redoubt in

size or in the depth of the chemocline and monimolimnium.

Redoubt Lake supports populations of sockeye, pink, chum and coho salmon; Dolly Varden, steelhead, and cutthroat trout, but only its sockeye stocks have been the focus of commercial, sport and subsistence fisheries. Records dating from the early 1800's indicate that Redoubt Lake supported annual harvests in excess of 50,000 sockeye salmon during Russian occupation. Currently, Redoubt Lake sockeye returns support the largest subsistence fishery for sockeye salmon in the Sitka area, and also support a saltwater sport fishery at the head of Redoubt Bay. A few Redoubt sockeye salmon are probably also harvested incidentally by commercial troll, seine and gillnet fisheries.

Subsistence harvest reports, returned by a fraction of subsistence permit holders, provide an index of subsistence fishing effort and harvest for Redoubt Lake and Bay but underestimate total effort and harvest because not all permit holders submit reports. Sport harvests of sockeye salmon have been estimated for the Sitka area since 1977 through the Statewide Harvest Survey (SWHS) and via an on-site marine creel survey conducted for the port of Sitka since 1992. On-site estimates for the Redoubt Bay sport fishery are not available.

By 1980, concern over Redoubt Lake sockeye salmon developed based on visual observations of low escapements and, in 1984, the USFS, ADF&G, and Northern Southeast Aquaculture Association (NSRAA) joined in an effort to enhance sockeye production through lake fertilization. A weir operated in conjunction with the fertilization project provided escapement estimates that increased from an average of 7,400 (1982–1988) to 37,600 fish (1989–1999) (Table 15). Fertilization efforts ended in 1997 but then resumed in 1999.

Large returns in recent years have contributed to increases in annual sport and subsistence harvests of sockeye salmon at Redoubt Lake and Bay. As marine sport fishing effort near Sitka has increased and regulations have become more restrictive, anglers have sought out alternative fishing opportunities, including salt water angling for sockeye salmon at the head of Redoubt Bay.

Table 15.—Escapements and reported subsistence harvest of sockeye salmon at Redoubt Lake along with estimated sport harvests of sockeye salmon in the Sitka SWHS area, 1982–2000.

Year	Escapement	Subsistence harvest	Sport harvest
1982	442	99	628
1983	2,525	36	382
1984	11,545	175	635
1985	10,799	97	210
1986	9,588	96	366
1987	13,581	199	447
1988	3,590	334	3,147
1989	29,945	2,625	2,148
1990	72,781	5,346	1,344
1991	45,252	3,102	810
1992	10,266	96	434
1993	24,854	2,320	1,126
1994	39,449	4,120	2,138
1995	34,457	2,968	1,579
1996	18,931	3,297	3,041
1997	28,436	2,253	3,509
1998	51,185	4,262	3,781
1999	57,593	5,299	7,566
2000	3,032	n/a	2,382

Similar to the trend in increasing escapement estimates, subsistence harvests at Redoubt Lake increased from an average of 150 (1982–1988) to 3,200 fish (1989–1999), and sport harvests in the Sitka area increased from 600 (1977–1987) to 2,000 fish (1988–1998). The 1999 sport harvest of sockeye in the Sitka area (7,566) was larger than any previous harvest, and the 1999 subsistence harvest at Redoubt Lake (5,299) was second only to that in 1990.

In 2000, we joined the USFS in a cooperative effort to initiate an on-site survey to estimate fishing effort and harvest by species for the subsistence and sport fisheries at Redoubt Lake and Bay. A 2-stage roving creel survey based on expansion of sample ratios was used, beginning on June 10. Unfortunately, escapement of sockeye salmon into Redoubt Lake was extremely poor in 2000, and both subsistence and sport fisheries at Redoubt Lake and Bay were closed effective July 13.

Data entry and analysis were initiated in December, 2000 and final estimates will be completed in 2001. Since the fishery was closed early in the season and the project will be conducted again in 2001, information from both seasons will be combined and incorporated into an ADF&G Fishery Data Series Report by June 2002. Information from this study will be used to evaluate the quality of existing harvest estimation programs with respect to the Redoubt fisheries. When combined with escapement data, these data will assist both agencies in evaluating and maintaining subsistence and sport fishing opportunities near Sitka by providing information for use in regulating the fisheries to ensure sustainability of the Redoubt sockeye run.

Nakwasina River Coho Salmon Stock Assessment

The Nakwasina River drainage is one of the larger river systems on Baranof Island and one of 6 systems in the Sitka Management Area surveyed annually for escapement of coho salmon. Foot surveys conducted from 1988 to 2000 documented peak counts ranging from 104 (1988) to 654 (1992) coho salmon in the Nakwasina River. Average survey counts in the Nakwasina River represent the second largest for streams surveyed in the Sitka area.

The Nakwasina River is important to area sport fisheries because it supports a significant population of coho salmon, is easily accessed from Sitka, and is one of the few rivers in Sitka Sound that attracts freshwater sport fishing effort for coho salmon. From 1984 to 1999, estimated angler effort expended in Nakwasina Sound and river ranged from 31 to 891 angler days. In the 1960s, the majority of the anadromous portion of the Nakwasina River valley, including riparian zones, was clear cut to the stream bank (G. Killinger, Sitka Ranger District, U.S. Forest Service, Sitka, personal communication). Nakwasina River coho salmon are of special concern because of the potential risk of excessive exploitation in combination with likely impacts to the stock from habitat damage.

In 1998, Division staff began a CWT project for coho salmon in the Nakwasina River to estimate smolt abundance and the harvest of this stock in commercial and sport fisheries. This ongoing

investigation will be used to assess whether current regulations ensure sustained yield of this stock and provide for maximum sport fishing opportunity.

Recoveries of CWTs from adult coho salmon in 2000 were used to estimate smolt abundance, adult harvest, and harvest distribution of coho salmon originating in the Nakwasina River. From April 22 through June 2, 1999, between 50 and 100 baited minnow traps were fished daily in the Nakwasina River. During this period, 3,985 coho salmon smolt ≥ 70 mm fork length (FL) were marked with an adipose finclip and given a CWT. Six overnight mortalities occurred, and 3,971 coho salmon containing CWTs were released. Tag retention in sampled fish was 99.8% at 24 hours after tagging.

In 2000, 48 adult coho salmon bearing CWT's from the Nakwasina River were recovered in random sampling of marine fisheries. This corresponds to an estimated harvest of 1,752 (SE = 423) in the sampled (marine sport and commercial troll and net) fisheries. The marine sport fishery harvested an estimated 61 Nakwasina fish. Estimated smolt abundance in 1999 from the Nakwasina River was 47,571 (SE = 501).

The project was expanded in 2000 to estimate the abundance of coho salmon spawners in the Nakwasina. An open-population mark-recapture experiment was conducted simultaneously with CWT recovery efforts in the Nakwasina River during fall 2000. From September 22 to December 12, 2000, 580 coho salmon were captured, examined for tags and marked in the Nakwasina River. Results will be presented in detail in a Division of Sport Fish Fishery Data Series (FDS) report in 2001.

Baited minnow traps were again fished in the lower Nakwasina River from April 9 through May 22, 2000, and 10,335 coho salmon smolt ≥ 70 mm FL were marked with an adipose fin clip and given a CWT. Seven overnight mortalities occurred, and tag retention in sampled fish was 99.8% at 24 hours after tagging. In 2000, fish less than 85 mm FL were given a tag code different than the tag code used for fish 85 mm FL or greater. Also, fish present in Bridge Creek, a tributary that flows into the Nakwasina below

mean high tide, were captured and tagged using a unique (third) tag code. This location was included for the first time in 2000 to boost sample sizes and produced approximately one-third of all smolt tagged. Smolt data collected in 2000 will be reported along with adult harvest and recovery data collected in 2001 in a FDS report in 2002.

Baranof Lake Research

Baranof Lake is relatively unique among large lakes in Southeast Alaska in that it supports only one species of fish, cutthroat trout. Physical and biological data were first collected from Baranof Lake in 1981 (Schmidt 1982). The average length of cutthroat trout in the 1981 sample (primarily sport caught) was 350 mm FL and fish up to 500 mm FL were collected, indicating that the potential for a high-quality fishery existed in Baranof Lake.

Baranof Lake is now a moderately popular recreation area. In a mail survey that censused parties reserving USFS cabins on 13 cutthroat lakes throughout Southeast Alaska during 1992, Jones (1994) estimated that 528 (8%) of the total 6,338 hours fished and 113 (7%) of 1,573 total angler-days were expended at Baranof Lake. During 1999, USFS cabin users fished 69 hours to catch 89 cutthroat trout while harvesting 15. These estimates only reflect effort exerted by USFS cabin users; the fishing pressure at Baranof Lake was probably greater due to expansion of tourism at Baranof Warm Springs (A. Schmidt, Sitka, Alaska, personal communication).

A research project at Baranof Lake is underway to estimate maximum sustained yield (MSY) of cutthroat trout. This MSY project is taking place at lakes having relatively high (Baranof Lake) and low (Turner Lake) densities of cutthroat trout; we believe that most of the lakes in Southeast Alaska will fall somewhere within the spectrum of these high- and low-production examples.

Data collection and subsequent analysis to estimate MSY and natural survival (and mortality) rates at Baranof Lake will be completed as part of this research plan. MSY estimates will be based on sampling events separated by 4-years, the period during which recruitment from a parent brood to sampling gear is largely complete. Since annual sampling in each system began in 1994,

the first estimates of MSY will be available in 2000. Since multiple (perhaps 3) estimates of MSY for each system are probably needed to insure robustness of the relationships, the experiment at Baranof Lake will extend through the year 2002. Other benefits of the sampling include direct estimates of the natural survival rate, among the first for cutthroat trout in Alaska (Table 16).

During May and June, 1994, an in-season mark-recapture abundance experiment was conducted at Baranof Lake (Der Hovanisian and Marshall 1995). The abundance of cutthroat trout ≥ 180 mm FL was estimated at 12,186 (SE = 888) for a density of approximately 38 fish per hectare. This density ranked Baranof Lake foremost among carefully studied large lakes (Florence, Wilson, Hasselborg, and Turner Lakes) in Southeast Alaska. Subsequent Jolly-Seber abundance estimates for the years 1995–1998 ranged from 5,582 to 7,794 cutthroat trout ≥ 180 mm FL (Table 16).

Three 10-day sample trips to Baranof Lake were conducted between May 10 and July 24, 2000; 2,112 cutthroat trout ≥ 180 mm FL were captured, tagged (or previous tags recorded), and released. Approximately 21% of the fish captured had been marked during previous years. Preliminary analysis of the 2000 Baranof data (in-season estimate) generated an abundance estimate of 5,812 (SE = 537), which is similar to the previous Jolly-Seber estimates. At the conclusion of these research efforts, it is hoped that maximum sustainable harvests of resident cutthroat trout in other Southeast Alaska lakes can be bracketed by analogy to the sustainable harvests from low and high productivity lakes (on an acre-by-acre basis, for example).

Salmon Lake Coho Salmon

In 1999, we initiated a CWT project for coho salmon in Salmon Lake to estimate smolt abundance and harvest of this stock in commercial and sport fisheries. Unusually late ice out delayed the startup of the trapping and tagging operations, and the project was terminated mid-season when it became evident that the number of fish tagged would fall well short of the 5,000 fish goal. From May 21 through May 31, 1999 approximately 50 baited minnow traps were fished daily in Salmon Lake. During this period, 584 coho smolts (>84

mm FL) were released with an adipose fin clip and CWT. The average catch per trap-day was 1.18 smolt (Suchanek et al. 2001b).

In 2000, eight adult coho salmon bearing CWT's from Salmon Lake were recovered in random sampling of commercial troll (4 tags) and marine sport (4 tags) fisheries. Due to the small sample sizes, no further work was conducted on the adult return in 2000 to determine the fraction of the run tagged in 1999.

Lake Stocking Projects

Swan Lake

Swan Lake, located in downtown Sitka, is the site of an annual Junior Trout Derby for young anglers. Each year, Sport Fish Division supplements the rainbow trout population in Swan Lake with subcatchable rainbow trout from Sukoi Lake, Kruzof Island. The purpose of this program is to improve angler success by increasing the availability of rainbow trout in Swan Lake. Its objectives are to produce 200 angler-days of fishing effort and to provide for a harvest of 150 rainbow trout each year. The Statewide Stocking Plan permits transport of up to 300 fish annually.

On June 9 and 10, 2000, five hoop traps were baited with salmon eggs and set along the Sukoi Lake perimeter in 2.5 to 4 feet of water. Traps were checked and rebaited at least once during the 2-day period. Hook and line gear was used (16 hours effort) both days to supplement hoop trap catches.

A total of 240 fish were captured in Sukoi Lake, with 175 rainbow trout caught in hoop traps and an additional 65 caught by hook and line. Trapping CPUE during the 2-day period averaged 24 rainbow trout per trap-day and varied between sites. Two sets near an island in the southeast corner of the lake were the most productive (one 12-hour soak produced 110 fish for two traps combined). Catches of rainbow trout and Dolly Varden were segregated spatially. After fishing for 24 hours, one trap near the mouth of the inlet stream contained approximately 1,000 small Dolly Varden but no rainbow trout while two traps located in deeper water contained no Dolly Varden. Hook and line CPUE averaged 4.1 rainbow trout per angler-hour.

Table 16.—Estimated abundance and survival of cutthroat trout ≥ 180 mm FL and angler effort (number of anglers and angler-days fished), harvest and total catch of cutthroat trout at Baranof Lake, 1990–2000. Fishing effort, harvest, and catch statistics from SWHS.

Year	Abundance ^a	SE	Survival rate	SE	Number of anglers	Angler-days fished	Harvest	Catch
1990					426	617	426	1,413
1991					319	497	392	654
1992					399	608	422	1,952
1993					362	842	841	2,943
1994	12,186	888	0.42	0.03	321	693	361	4,304
1995	7,224	533	0.58	0.05	451	1,109	218	1,940
1996	7,050	612	0.52	0.05	234	364	144	2,192
1997	5,582	487	0.61	0.06	671	1,111	337	2,910
1998	7,794	759	0.46	0.04	513	702	223	2,888
1999	6,961	652			320	498	95	1,020
2000	5,812	537			369	750	159	1,476

^a Petersen estimate for 1994, Jolly-Seber estimates for 1995–1999, preliminary Petersen estimate for 2000 (i.e., not all abundance assumptions statistically tested).

A number of captured fish were released and not transported after showing signs of stress. Warm (64.8°F) water temperature and associated (low) oxygen levels may have contributed to this stress. As opposed to observations the previous year, no fish were observed spawning in the outlet stream.

On June 11, 2000, 152 rainbow trout were successfully transported from Sukoi Lake in an aerated tank via floatplane and introduced to Swan Lake.

Beaver Lake

Beaver Lake, located 5 miles south of Sitka, supports the only Arctic grayling fishery near a roadside in Southeast Alaska. Recent enhancement efforts at Beaver Lake began in 1986 with the introduction of 10,000 Arctic grayling sac-fry, and continued with stocking 15,000 Arctic grayling sac-fry each year. The purpose of this program was to increase Arctic grayling sport fishing opportunities in Beaver Lake by supplementing an existing Arctic grayling stock originally introduced in 1965. The objectives were to generate at least 750 angler-days of fishing effort and provide for a harvest of 250 Arctic grayling per year. From 1988 through

1998, annual harvests of Arctic grayling averaged 56 fish (range 0–418). This program was discontinued after 1997 due to low brood stock abundance, and recent policy restrictions placed on transporting fish over large geographic distances and on utilization of sac-fry for stocking purposes.

In 1999, sampling conducted cooperatively by Sport Fish Division, the USFS Sitka Ranger District, and Sitka High School students indicated that abundance of Arctic grayling in Beaver Lake was low (Suchanek et al. 2001b). In 2000, 500 1-g fingerlings were requested from the Fort Richardson hatchery for stocking in 2001.

Management Actions

Alaska Board of Fisheries Regulation Changes

During January and February meetings in 2000, the Alaska Board of Fisheries (BOF) changed regulations pertaining to two issues specific to the Sitka management area. First, the BOF consolidated sport and personal use regulatory boundaries for rockfish, razor clams, and lingcod

in Sitka Sound. Prior to 2000, three regulatory areas existed in which specific sport and personal use regulations existed for each of these species. Each area was unique, described a large portion of Sitka Sound, and overlapped other areas which created unnecessary confusion by sport and personal use fishers as well as difficulty in enforcement. To address this problem, ADF&G submitted a proposal to the BOF to consolidate the existing boundaries into one set consistent with boundaries established in the Sitka Sound Halibut Management Plan. Local regulations for these species (and halibut) now pertain to the Sitka Sound Special Use Area.

The BOF also repealed existing trout regulations for Indian River, Starrigavan Creek, and Sawmill Creek. In 1989, the BOF implemented regulations that prohibited retention of rainbow trout and steelhead, and required the use of unbaited, single-hook, artificial lures from April 1 through June 30 to protect rainbow trout and steelhead in these systems. In 1994, bag limit reductions for trout and steelhead, an annual limit for steelhead, minimum size limits for trout and steelhead, and a prohibition on the use of bait were first implemented regionwide to increase protection for Southeast Alaska trout and steelhead stocks. Based on a comparison between the 5-year period before and the 5-year period after 1994, when the majority of the current regionwide changes were implemented, reductions in steelhead and cutthroat trout harvests were 92% and 62%. These reductions, although potentially influenced by other factors such as changes in fishing effort or stock abundance, indicate regionwide regulatory changes effectively increased protection for steelhead and trout and antiquated local Sitka area regulations. Regionwide trout regulations now apply to Indian River, Starrigavan Creek and Sawmill Creek.

Sockeye Salmon Restrictions

Sockeye salmon returning to small lake systems such as Falls Lake, Salmon Lake, Klag Bay, and Hoktaheen Lake support on site subsistence fisheries. These sockeye returns also support sport harvests to a lesser extent and are taken incidentally in more distant marine commercial and sport fisheries. Based on staff observations, public reports, and sockeye salmon behavior, the

vast majority of on site harvests occur in salt water.

Subsistence fisheries target sockeye salmon under a subsistence fishing permit system administered by ADF&G area offices. Permits are issued to individual households and list general permit conditions such as area restrictions, seasons, individual and household possession limits by area, and requirements for harvest reporting to ADF&G. Permits issued from the Sitka office identify 15 locations, including Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake, which are open to subsistence fishing for sockeye salmon. Sport fishing at these locations is managed under regionwide regulations which specify bag limits of 6 chum, 6 pink, and 6 sockeye salmon (16 inches or more in length) with possession limits of 12 for each species. Prior to 1999, subsistence and sport fishing regulations at these locations remained unchanged for at least the previous 10 years.

Limited information prevents an assessment of stock status, subsistence needs, and management efficacy at Falls Lake, Salmon Lake, Klag Bay, or Hoktaheen Lake. Currently, there are no on site harvest monitoring or stock assessment projects at these sites. Subsistence harvest reports, returned by a fraction of permit holders from 1985 through 2000, provide an index of subsistence fishing effort and harvest for each system but underestimate actual effort and harvest because not all permit holders submit reports. Sport fishing effort and harvest is known to occur at these locations but is not estimated for each system exclusively by the Statewide Harvest Survey because sport anglers using these sites are infrequently surveyed. No guided harvest was reported on saltwater charter vessel logbooks for these locations in 1998; although 32 fish were reported in 1999. Based on public reports, questionnaire response rates and logbook data; sport fishing effort and harvest at these locations is low relative to the subsistence fisheries. A weir operated at Falls Lake from 1981–1985, 1987 and 1989 provided complete counts of sockeye salmon escapement that ranged from 1,278 to 5,789 and showed no apparent trend.

Prior to the 1999 season, a review of subsistence harvest reporting in the Sitka area revealed a trend of increasing subsistence permits and harvests of

sockeye salmon at Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake. Additionally, the review indicated that reported harvest timing occurred over a shorter period than permitted seasons at a number of locations, including Falls Lake. Consistent with the trend in annual harvests, public complaints concerning the illegal use of fishing gear (blocking streams with gillnets, seining schools of fish with gillnets) were also increasing.

To address these issues, management staff modified subsistence restrictions on the Sitka permit as a short-term measure and decided to seek funding for stock assessment programs that would provide information necessary to determine stock status and appropriate fishing regulations as a long-term goal. In spring 1999, subsistence permits issued from the Sitka office were modified to reduce fishing seasons at 13 of the 15 locations, including each of the four locations above, to align the season with existing run and harvest timing. Possession limits were also reduced at three locations, including Klag Bay and Hoktaheen Lake. Also in 1999, ADF&G submitted a request to the Federal Subsistence Board to fund a stock assessment project at Falls Lake, which was subsequently approved to begin in the 2001 field season.

In 2000, sport fishing bag and possession limits were reduced to 3 sockeye salmon greater than 16 inches in length per day and 6 in possession at Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake. These restrictions became effective June 9 and remained in effect for the duration of 2000 (E.O. 1-10-00). Each of these systems was subjected to increasing subsistence harvests and received sportfishing effort. Restrictions in the subsistence and sport fisheries were implemented as a precautionary step until stock status could be assessed by the pending Falls Lake project and to avoid more substantial restrictions in the future. By aligning subsistence fishing seasons with existing run and harvest timing, managers intended to reduce the rate of increase in subsistence harvests at Falls Lake and aid enforcement efforts to prevent illegal fishing. The intent of sport fishing restrictions was identical to the rationale for restricting the subsistence fishery: to prevent or slow any increase in sport harvests as a pre-

cautionary measure until results became available from the pending stock status project.

In fall 2000, ADF&G submitted a proposal to the Federal Subsistence Board for funding for a stock assessment project at Klag Bay to begin summer 2001. That proposal was approved by the Staff Technical Committee and awaits review by the Regional Advisory Committee and Federal Subsistence Board.

Chinook Salmon Terminal Harvest Area Management

Based on projections by Northern Southeast Regional Aquaculture Association (NSRAA), surplus hatchery-produced chinook salmon were expected to return to the Hidden Falls terminal harvest area in 2000. The BOF, under 5 AAC 75.005, authorized the department to increase bag and possession limits and liberalize methods and means, by emergency order, when hatchery-produced fish escape through existing fisheries to designated harvest areas in numbers that exceed brood stock or cost recovery goals. In response to the surplus projection, bag and possession limits in the Hidden Falls terminal harvest area were increased to 4 chinook salmon, of which no more than 2 could be 28 inches or more in length, from June 17 through July 31, 2000 (E.O. 1-14-00).

NSRAA expected a return of 24,600 adult chinook salmon produced by Medvejie hatchery in 2000. Of these, 15,900 were expected to return to the hatchery, of which 2,000 were needed for brood stock. As a result of a change in NSRAA cost recovery priorities, the remaining 13,900 chinook salmon were not considered surplus to brood stock and cost recovery goals, but were needed for cost recovery. Prior to mid-June, when bag limits were increased in the Hidden Falls terminal harvest area, NSRAA managers did not project a surplus of Medvejie fish to be available after brood stock and cost recovery needs were met. However, NSRAA reported cost recovery harvests to be unusually strong June 22, when a morning harvest was estimated at 1,900 chinook salmon.

Given some likelihood that brood stock and cost recovery goals would be met in 2000, bag limits were increased in Silver Bay with the intent that the Medvejie (Bear Cove) Special Harvest Area

might close to sport fishing later, should progress toward cost recovery and brood stock goals slow. From June 24 through July 31, 2000, the bag and possession limit in Silver Bay was increased to 4 chinook salmon, only 2 of which could be 28 inches or more in length (E.O. 1-20-00). The area opened included marine waters of Silver Bay east of a line from Entry Point to Silver Point. This area was made larger than the area used in the past to remain consistent with BOF action, taken in February, that enlarged the area designated in the Silver Bay management plan, and with action taken in the commercial troll fishery that opened this area for spring experimental fisheries.

Local Sitka streams do not support wild populations of chinook salmon, but chinook salmon have been observed in Sawmill Creek and the outlet to Salmon Lake since NSRAA began a chinook salmon enhancement program. Harvest of chinook salmon was allowed by emergency order in these systems each year from 1995 through 1998 after chinook salmon were observed during stream surveys. In 2000, bi-weekly foot surveys were conducted at Sawmill Creek from July 25 through September but no chinook salmon were observed, and the streams remained closed to the harvest of chinook salmon.

Redoubt Lake Sockeye Salmon Closure

From June 10 through July 10, 380 sockeye salmon were counted through a weir operated by the USFS at the outlet of Redoubt Lake. Based on past weir data, approximately 17% of annual escapements are counted at the weir through July 10, and the 2000 escapement was projected to reach only 2,300 sockeye salmon. That level represented only 6% of the average (1989–1999) escapement of 36,000 sockeye salmon, and the lowest since 1988.

Sport and subsistence fisheries at Redoubt Lake and Bay were therefore closed concurrently with action taken by the USFS that closed fisheries in waters under Federal jurisdiction. All saltwater areas within Redoubt Bay east of the longitude of Road Island along with all freshwater drainages flowing into that portion of Redoubt Bay were closed to retention of sockeye salmon by sport anglers from July 14 through December 31, 2000 (E.O. 1-23-00).

Although the sport (and subsistence) fishery was closed during four of the past ten years, the closure in 2000 was implemented earlier than any since 1990. The 2000 closure was also the first in which Federal fisheries managers took parallel action, one instance of relatively few statewide in 2000. The 2000 escapement count totaled 3,032 sockeye, the lowest since 1983.

Silver Bay and Salmon Lake Coho Salmon Management

From 1984 to 1990, annual spawning escapements of coho salmon in Salmon Lake declined steadily from 1,500 to 200 fish, and exploitation of the stock in commercial and sport fisheries increased from 36% to 74% (Schmidt 1996). Since 1990, fishing effort has continued to increase in the commercial purse seine and sport fisheries, but annual spawning escapements have not been estimated. A CWT study completed in 1995 indicated that the 1995 exploitation of Salmon Lake coho salmon was high, and the resulting escapement was low.

Since 1997, commercial and sport fisheries in Silver Bay have been restricted, beginning in early September, in an effort to conserve Salmon Lake coho salmon.

Beginning in 1998, ADF&G and NSRAA initiated a cooperative effort to conduct snorkel surveys of the main inlet stream system to Salmon Lake during the peak of spawning, assumed to occur in October, to assess the potential for survey counts to indicate trends in escapement. Peak surveys in 1998 and 1999 resulted in counts of 132 and 107 large adults. The potential for survey counts to indicate trends in escapement remains unknown and there are currently no indications of recent change in the exploitation and escapement trends previously observed for Salmon Lake coho salmon.

At the February 2000 meeting, the BOF acted on a number of proposals that indirectly impact coho salmon returning to Salmon Lake. At the meeting, members of the public, staff, and BOF also voiced concern over the status of this stock. In response, the BOF directed ADF&G to work closely with NSRAA and other stakeholders to develop a stock assessment program for Salmon Lake coho salmon. The BOF also directed ADF&G to conservatively manage fisheries that harvest Salmon Lake coho salmon.

During July and August 2000, strong returns of chum salmon near Sitka again resulted in large fishing effort in the commercial purse seine and gillnet fisheries, and sport fishing effort near Sitka continued to remain at high levels similar to recent years. By September 1, survival of 2000 returns of hatchery-produced coho salmon in the Sitka area was projected to be about 10%, similar to average historical levels.

The 2000 commercial and sport fisheries were managed conservatively to ensure escapement of coho salmon into Salmon Lake. Effective September 8, Silver Bay inside a line from the westernmost tip of Makhnati Island to the westernmost tip of Cape Burunof and the Salmon Lake drainage were closed to the retention of coho salmon in the sport fishery (E.O. 1-32-00). At the same time, the commercial troll fishery was closed in Silver Bay and Eastern Channel. This action was consistent with management action taken each year since 1997. Additional measures were taken in the commercial fisheries for the protection of chum salmon brood stock with incidental benefits to Salmon Lake coho salmon. These included closure of the Deep Inlet THA and the terminal chum salmon trolling area from August 26 through August 29, closure of Silver Bay effective August 26, and closure of the Deep Inlet THA fisheries effective September 2.

On October 17, 142 large adult coho salmon were observed during a snorkel survey of the inlet stream system. This observation suggests that the spawning escapement in Salmon Lake was not at an extremely low level.

In fall 2000, ADF&G, NSRAA, Sitka Tribe of Alaska (STA), and the USFS Sitka Ranger District jointly submitted a project investigation plan for Salmon Lake stock assessment to the Federal Subsistence Board. The proposal was subsequently funded, and the agencies will implement a long-term project in Salmon Lake to estimate coho harvest, smolt abundance, and spawning escapement as well as sockeye escapement. Results will be used to ensure the maintenance of wild stocks of Salmon Lake sockeye and coho salmon.

Sitka Sound Coho Salmon Restrictions

Effective October 11, bag and possession limits for coho salmon were reduced in response to poor

escapement survey results in 2000 (E.O. 1-35-00). Bag and possession limits were reduced to 2 coho salmon per day, 4 in possession in marine waters of, and all freshwater drainages flowing into, the Sitka Sound Special Use Area.

Foot surveys conducted from September 26 through October 8 indicated that spawning escapements of coho salmon in the Sitka area were weak. Survey counts in four of five Sitka area streams surveyed ranged from 34% to 91% of average (1980–1999) levels; counts in two Sitka area streams were less than 40% of average levels. In contrast, early Redoubt Lake weir counts and returns to Medvejie hatchery indicated average or strong coho returns to those locations.

Sitka Sound Pacific Halibut Local Area Management Plan

The Sitka Sound Pacific Halibut Local Area Management Plan (LAMP) became effective October 29, 1999. The Sitka Sound Halibut Task Force developed the Sitka Sound LAMP in response to indications of declining Pacific halibut harvests and reduced opportunity for local fishers to catch Pacific halibut in Sitka Sound. The Task Force, comprised of local user groups, determined that there was an increase in competition among users in Sitka Sound. The Task Force submitted the LAMP proposal to the North Pacific Fishery Management Council, which approved the proposal in February 1998.

The primary provisions of the LAMP include prohibiting charter vessels from fishing for halibut within Sitka Sound from June 1 through August 31. The LAMP does not restrict non-guided sport fishing. The plan also prohibits longline vessels greater than 35 feet from fishing for Pacific halibut within Sitka Sound and prohibits longline vessels less than 35 feet from fishing for Pacific halibut within Sitka Sound from June 1 through August 31.

In 2000, the sport fishery in Sitka Sound took place for the first time under the provisions of the plan.

Surveys

Sitka area streams are surveyed annually to count steelhead and coho salmon. Peak counts are used as indices of spawning escapement to depict long-

term trends in spawning abundance. In addition, razor clams are being monitored on an important local beach.

Steelhead

Beginning in 1973, stream surveys have been conducted to count spawning steelhead in Sitkoh Creek, and, beginning in 1993, Ford Arm Creek (Table 17). Visual surveys conducted by foot were replaced with snorkel surveys in 1996 (Sitkoh Creek) and 1997 (Ford Arm Creek) because snorkel surveys were found to observe a higher proportion of steelhead populations (Johnson and Jones 1998). Observers attempt to conduct surveys once per week for three consecutive weeks during May to ensure a count during the week of peak inriver abundance.

Surveys were conducted in Sitkoh Creek on May 4 and May 17, 2000. The peak count occurred May 4 and was the lowest since 1996, when snorkel surveys were initiated. While results suggest spawning abundance in 2000 was below the average observed from 1996–1999, surveys conducted during 2000 may have missed the peak of inriver abundance and therefore may not be comparable with past surveys.

Surveys conducted in Ford Arm Creek on May 8, May 15, May 26, and June 1, 2000 produced counts of 86, 132, 134, and 89 steelhead. Survey frequency enabled a count during the week of peak abundance, and the peak count on May 26 was the second highest count since the inception of snorkel surveys in 1997. Survey quality did not appear to be impacted by unusual run timing, and visibility and survey conditions were generally good.

Coho Salmon

Sport and Commercial Fisheries staff conduct annual foot, snorkel, and aerial surveys of streams in the Sitka area to count spawning escapements of coho salmon. Coho escapement counts ranged from very low to slightly above average for the 6 systems surveyed (Table 18). Peak counts for four (Sinitsin, St. John, Starrigavan, and Eagle River) of the five streams in Sitka Sound were well below average (1980–1999); counts in Nakwasina were 8% above average. In contrast to weak counts in Sitka Sound, counts conducted for Black River and weir counts conducted for Ford

Table 17.—Peak escapement counts of steelhead in the Sitka Area , 1973–2000.

Stream	Year	Survey type (no.)	Peak survey date	Peak count
Sitkoh Creek	1973	Foot (1)	04/27	33
	1976	Foot (1)	05/17	18
	1978	Foot (1)	05/16	17
	1980	Foot (1)	06/02	42
	1981	Foot (1)	06/03	42
	1982	Foot (2)	05/30	58
	1983	Foot (1)	05/17	143
	1984	Foot (1)	05/11	92
	1985	Foot (1)	05/21	115
	1986	Foot (1)	05/21	58
	1987	Foot (1)	05/20	107
	1988	Foot (1)	05/24	17
	1989	Foot (1)	05/18	20
	1991	Foot (1)	05/14	40
	1993	Foot (1)	05/14	23
	1994	Foot (1)	05/16	67
	1995	Foot (2)	05/09	81
	1996	Snorkel (2)	05/14	270
	1997	Snorkel (1)	05/20	329
	1998	Snorkel (2)	05/12	154
	1999	Snorkel (2)	05/19	120
	2000	Snorkel (2)	05/04	112
Ford Arm Creek	1993	Foot (3)	07/14	31
	1994	Foot (1)	05/17	67
	1995	Foot (3)	05/24	75
	1996	Foot (1)	05/16	125
	1997	Snorkel (2)	05/16	197
	1998	Snorkel (2)	05/11	103
	1999	Snorkel (3)	05/18	89
	2000	Snorkel (4)	05/26	134

Arm, both along the outer coast of Chichagof Island, were slightly above average. Unlike recent past years, water visibility and survey conditions in 2000 were fair to good for most surveys.

Table 18.—Peak escapement counts of coho salmon in the Sitka Area by date, 1980–2000.

Year	St. John											
	Sinitstin Creek			Baptist Bay Creek			Starrigavan River			Eagle River		
	Peak survey date / type ^a	Peak count		Peak survey date / type ^a	Peak count		Peak survey date / type ^a	Peak count		Peak survey date / type ^a	Peak count	
1980	30-Sep / F	39		9-Oct / F	26		ns ^b / F			22-Sep / F	27	
1981	6-Oct / F	85		14-Oct / F	51		20-Oct / F	170		29-Oct / F	70	
1982	20-Oct / F	46		ns ^b			21-Oct / F	317		7-Oct / F	780	
1983	27-Sep / F	31		13-Oct / F	12		6-Oct / F	45		ns ^b		
1984	10-Oct / F	160		10-Oct / F	154		10-Oct / F	385		14-Oct / F	217	
1985	15-Oct / F	144		8-Oct / F	109		11-Oct / F	193		10-Oct / F	715	
1986	30-Sep / F	4		10-Oct / F	9		10-Oct / F	57		7-Oct / F	408	
1987	23-Sep / F	32		23-Sep / F	9		9-Oct / F	36		28-Oct / F	275	
1988	3-Oct / F	56		3-Oct / F	71		12-Oct / F	45		30-Oct / F	47	
1989	5-Oct / F	76		5-Oct / F	89		13-Oct / F	101		27-Oct / F	104	
1990	1-Oct / F	80		1-Oct / F	35		17-Oct / F	39		19-Oct / F	129	
1991	1-Oct / F	186		10-Oct / F	107		2-Oct / F	142		31-Oct / F	195	
1992	23-Sep / F	265		14-Oct / F	110		12-Oct / F	241		25-Oct / F	621	
1993	7-Oct / F	213		6-Oct / F	90		13-Oct / F	256		30-Oct / F	654	
1994	30-Sep / F	313		30-Sep / F	227		11-Oct / F	304		ns ^b		
1995	26-Sep / F	152		5-Oct / F	99		6-Oct / F	272		14-Oct / F	404	
1996	2-Oct / F	150		2-Oct / S	201		17-Oct / F	59		29-Sep / F	626	
1997	29-Sep / F	90		30-Sep / S	68		27-Oct / F	55		30-Oct / F	553	
1998	1-Oct / F	109		9-Oct / S	57		8-Oct / F	123		14-Nov / F	239	
1999	11-Oct / S	48		29-Oct / S	25		8-Oct / S	166		2-Nov / F	653	
							ns ^b			12-Nov / S	291	
Mean (80–99)		114			82			158			313	
5-yr Mean (95–99)		110			90			135			355	
2000	26-Sep / F	62		26-Sep / S	32		8-Oct / S	144		29-Sep / S	108	
										8-Nov / F	419	
										2-Oct / H	880	

^a F = foot, S = snorkel, and H = Helicopter.

^b ns = not surveyed.

Razor Clam Monitoring

Prior to 1994, Kruzof Island beaches supported the primary sport, personal use and subsistence fisheries for razor clams in the Sitka area. Fisheries were concentrated at Kamenoi Beach in an area about 0.7 km long which is exposed to the ocean swell and occurred during minus tides when weather conditions were favorable. From 1977 through 1986, trends in annual harvests of razor clams in the Sitka area, which averaged about 8,700 clams, were stable (Mills 1988). After 1986, annual harvests declined until 1993, when 1,000 clams were taken (Mills 1994).

During spring 1993, numerous reports from the public indicated a substantial decrease in the number of razor clams on Kamenoi Beach. Department surveys of the fishery during April and May low tides documented a general lack of success; experienced clam diggers interviewed had been able to find very few clams. Potential causes of the decline include changes in tidal currents, changes in beach composition and/or topography, increased predation by sea otters, overexploitation, and disease.

In response, the waters of Sitka Sound were closed to the taking of razor clams in 1993, and in 1994, Sport Fish Division initiated annual surveys to monitor the abundance and size and age compositions of razor clams on Kamenoi Beach. Each year during minus tides in May or June, two people each dig for one hour throughout the known razor clam distribution. The number of clams dug is used as an index to identify long-term

trends in abundance levels. All clams collected are measured for length and aged to identify successful reproduction and relative size and age composition.

Two surveys were conducted in 2000. On June 4, 2 people dug 66 clams in 1 hr, 17 minutes during a -3.2 foot tide with little swell (Table 19). On July 3, 34 clams were dug by 2 people in 50 minutes, during a -3.4 foot tide and little swell. Survey indices, adjusted to 1 hour, were 51 and 40, respectively; a sharp decline from 1999 and the lowest since surveys began in 1994. To ensure continued recovery of this population, sport, personal use and subsistence fisheries remained closed to the taking of razor clams in 2000.

Access Projects

Expansion of the existing parking lot at the Starrigavan boat launch facility was discussed with DNR staff, but the project has not yet been funded. Specifically, staff discussed expanding the parking lot to the north by 15 feet to provide for 14 parking spaces for vehicles without trailers. Currently, vehicles without trailers park in spaces for vehicles with trailers, rendering the spaces for trailers unusable. During weekends in the summer, parking space is fully utilized and overflow must use more distant parking areas or other launch facilities.

In 1999, a fish cleaning facility was constructed for use by sport fishing vessels in Thomsen Harbor under a Cooperative Agreement with the City and Borough of Sitka (Suchanek et al. 2001b). In 2000, the concept of a second cleaning facility

Table 19.—Razor clam indices for Kamenoi Beach, 1994–2000.

Year	Age									Total
	1	2	3	4	5	6	7	8	9	
1994	56	44	24	13	10	7	3	1		158
1995	22	43	38	10	9	2	7			131
1996	8	20	30	36	6	4	1	2	1	108
1997	1	4	61	19	5	4				94
1998	5	16	10	39	5	1				77
1999		21	25	42	20	3				111
2000 ^a	4	5	12	10	25	3	1			51
2000 ^b		2	9	13	8	1				40

^a Survey of June 4.

^b Survey of July 3.

located toward the south end of the city harbor system was discussed further with City Harbor Department staff but is not being pursued by the city at this time. One continuing difficulty inherent to this potential project is a lack of land access.

The concept of a boat launch facility consisting of a boat ramp, float, and parking and picnicking areas was also discussed with staff of the City Parks and Recreation Department. In 2000, the city submitted a funding request for such a facility at Herring Cove in Silver Bay.

JUNEAU / GLACIER BAY AREA

The Juneau management area includes all marine and fresh waters in the vicinity of Admiralty Island, Douglas Island, Northern Chichagof Island, Lynn Canal, and the immediate Juneau area (Figure 11). Included in this area is the Glacier Bay harvest area as reported in the Statewide Harvest Survey. The major Juneau area sport (or personal use) fisheries are in marine waters for chinook salmon, coho salmon, Pacific halibut, king crab, and Dungeness crab, and in freshwater for coho salmon, cutthroat trout, Dolly Varden, and steelhead. Sport Fish area management staff consists of one permanent Fishery Biologist III, Mark Schwan, and a Fishery Biologist II assistant, Brian Glynn.

Local Management and Research Programs

There were a variety of research and stock assessment programs conducted in the Juneau management area by divisional and other departmental staff in 2000. Almost all of these are ongoing programs designed to track the status of fish stocks and fisheries in order to adequately manage stocks for sustained yield and to meet quota and allocation requirements as established by the Alaska Board of Fisheries.

The Division of Sport Fish conducted full stock assessment programs on the Taku River for both chinook and coho salmon in 2000. These programs consisted of implanting juveniles of both species with coded wire tags as the fish migrated down river to the sea. Returning adult chinook and coho salmon were captured with one or two fish wheels at Canyon Island, and then these tagged fish were recovered upstream in

Canadian fisheries or during spawning ground surveys later in the season to determine the marked rate. This information, along with tag recoveries from common property fisheries, allows the department to estimate contribution to fisheries, the escapement, total return, and therefore exploitation. The Division of Commercial Fisheries conducted a similar coho salmon stock assessment program at the Berners River north of Juneau, and also conducted king crab stock assessment surveys in the surrounding marine waters, with special emphasis in subdistrict 11A. National Marine Fisheries Service personnel and departmental staff worked cooperatively at the Auke Creek weir to conduct a multi-species stock assessment program on the fishes of Auke Creek and Auke Lake. Results of the Auke Creek investigations are summarized in an annual report prepared by the weir staff (Taylor and Lum, *unpublished*).

A few trout and char research projects were also conducted in the Juneau management area. As part of the Auke Creek investigations, cutthroat trout, Dolly Varden, and a few steelhead smolts were captured and counted at the weir as they left Auke Lake. The trout research staff continued work at Turner Lake in the Juneau management area aimed to assess the effects of the trout catch-and-release regulation in place for that lake and also determine what level of harvests of cutthroat trout are sustainable, through a surplus production investigation.

The Juneau marine creel survey program again provided important in-season information concerning the local marine boat sport fishery. Dockside interviews were conducted from late April to late September. This program has gone through many iterations but is likely the longest running on-site marine creel program in Alaska. Spring chinook salmon fishing was very poor due in part to a weak year-class returning to the Taku River, but exploitation also seemed lower than usual. Douglas Island Pink and Chum, Inc. (DIPAC) hatcheries contributed 45% of the local marine boat sport harvest of chinook salmon this season. The local pink salmon returns were also very weak, and coho fishing was very slow in the early part of the return, with the fishery only approaching average in late August and early September. Again, exploitation rates appeared below average. DIPAC coho salmon contributed about 17% of the local marine boat coho harvest.

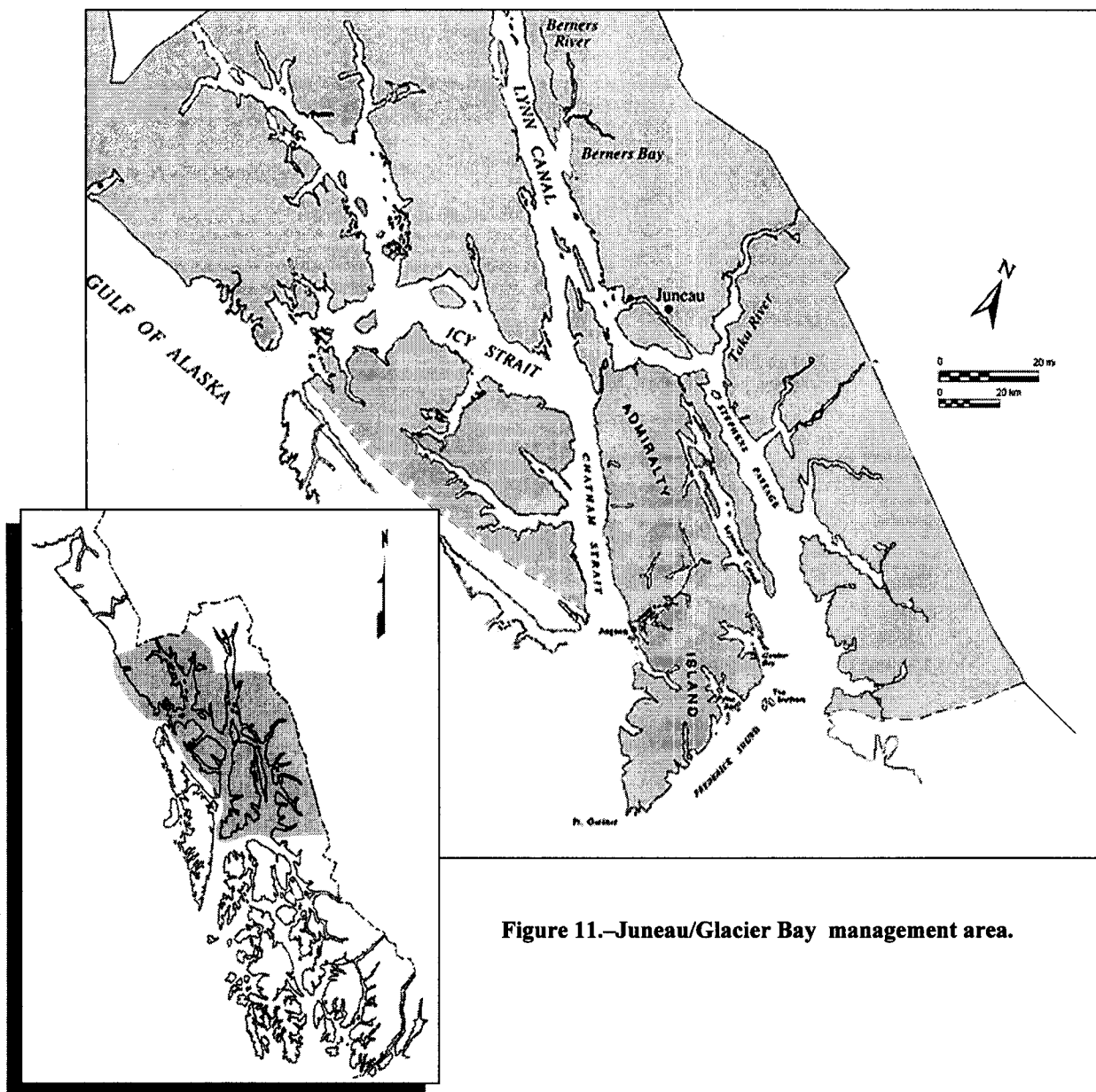


Figure 11.—Juneau/Glacier Bay management area.

Estimates of effort, harvest, catch, and contributions of wild and hatchery stocks all appear in an annual FDS report covering harvest studies of selected marine sport fisheries (Hubartt et al. 2001).

Management Actions

Chinook Salmon Terminal Harvest Area Management

On June 10, 2000, an emergency order (E.O. 1-09-00) opened a saltwater area around Juneau to additional harvest of surplus hatchery-produced chinook salmon. The bag and possession limit in

this saltwater area was 4 chinook salmon, of which no more than 3 could be 28 inches or more in length. This regulation remained in effect through August 31, 2000. The terminal area included all contiguous marine waters east of a line from Indian Point, in Auke Bay, to the tip of False Outer Point on North Douglas Island, and waters west of the Juneau-Douglas Bridge. Because the bag limit in this area allowed retention of at least 3 chinook salmon 28 inches or longer, chinook salmon taken in this terminal area by nonresidents did not count toward their annual limit, and there was no harvest recording requirement.

On June 22, the department opened all freshwater drainages crossed by the Juneau City and Borough road system that were open to sport fishing, to chinook salmon fishing (E.O. 1-16-00). The bag and possession limit in these freshwater areas was the same as in the saltwater terminal area: four chinook salmon, of which no more than three could be 28 inches or more in length. This regulation remained in effect through September 30, 2000. Anglers were also permitted the following methods and means at Fish Creek Pond: use of bait, retention of chinook salmon hooked elsewhere than in the mouth, and use of fixed or weighted hooks and lures and multiple hooks with a gap between the point and shank larger than one-half inch.

Saltwater Closure Adjacent to Auke Creek

A small area of Auke Bay, immediately off the mouth of Auke Creek, was closed to all sport fishing from July 7 through September 15, 2000 (E.O. 1-22-00). The affected area was inside of a line extending from the Auke Bay Laboratory's boat dock south to the nearest of two white buoys marking the location of the laboratory's salt water intake pipe, then continuing to an identical second buoy, and finally extending to a departmental regulatory marker on the Fritz Cove shoreline.

This action was necessary to protect adult sockeye salmon returning to the Auke Lake system. The projected escapement of sockeye salmon to Auke Lake in 2000 was less than 1,300 fish, far short of the escapement goal of 5,000 fish. The 1997 smolt out-migration, which was the primary age-class returning in 2000, was one of the lowest on record. Although this area was already closed to retention of sockeye salmon, anglers were targeting returning hatchery-released chinook salmon and approximately 10% of the sockeye salmon seen at the Auke Creek weir up to the time the area was closed had snagging injuries that likely resulted in mortality prior to spawning. Moreover, some anglers were intentionally harvesting sockeye salmon. Since more chinook salmon would be milling at the mouth of Auke Creek, it was necessary to push the sport fishery away from the mouth of the creek. The resulting escapement totaled 2,468 adult sockeye salmon, better than projected, but still only half the goal.

Twin Lakes Stocking

The department contracts with DIPAC to annually stock Twin Lakes with 10,000 catchable chinook or coho salmon. This stocking supports Family Fishing Day and sport fishing at the lake throughout the year. In 2000, DIPAC once again placed approximately half of the fish in Twin Lakes in April, to provide space for young-of-the-year fry in raceways. The remainder of the fish were stocked in late May, several weeks prior to Family Fishing Day.

Cutthroat Trout Stocking

Divisional staff worked with local USFS fisheries personnel in bringing more than 400 cutthroat trout from Florence Lake to Juneau for stocking into Glacier and Moraine Lakes, near the Mendenhall Glacier. The fish were equally divided among the two lakes. These lakes continue to be periodically stocked with wild trout from a remote lake to enhance roadside trout fishing opportunity.

Windfall Lake Sockeye Fishery

During 1998 and 1999, the Windfall Lake outlet stream and the Herbert River within 100 yards of its confluence with the Windfall Lake outlet stream were closed to all sport fishing during June and July by emergency order. The outlet creek and confluence area were then opened to sport fishing on Wednesday and Saturday of each week in June. This area otherwise remained closed to all sport fishing until early August. Additionally, Windfall Lake and all inlet streams were closed to sockeye salmon fishing through August 31, but remained open to fishing for other species. The June openings allowed an opportunity for anglers to fish for sockeye salmon, but also provided necessary protection for sockeye salmon returning to the Windfall Lake drainage to spawn.

During the February 2000 BOF meeting in Sitka, the BOF adopted a staff proposal that put this management regime into regulation for the Windfall Creek and Lake fisheries. The outlet creek fishery was again visited and monitored during most of the open days of the 2000 fishing season. The fishery appeared to be orderly and popular. Subsequent escapement index surveys in Slate Creek showed an increasing trend in escapement, with a peak foot survey count of

1,168 sockeye salmon. Other BOF action eliminated the Juneau roadside annual limit on sockeye salmon and thus also the requirement to record the harvest of sockeye salmon from roadside waters.

Other Board of Fisheries Regulation Changes

In 2000, the BOF increased the minimum legal size for harvest of cutthroat trout to 14 inches in all salt waters adjacent to the Juneau City Borough road system to a line ¼ mile offshore. The BOF also removed Thayer Lake from the "High-use" trout regulation category, thus placing it under regional regulations with a minimum size limit of 11 inches and a maximum size limit of 22 inches.

King Crab Personal Use Fishery

The Commercial Fish Division manages the personal use (PU) shellfish fisheries in the Juneau area (king crab may not be retained under sport fishing regulations). A permit is required to take red king crab from sub-district 11A. The winter PU fishery was closed by E.O. (on March 1) prior to the normal March 31 closure. When the summer PU king crab fishery reopened on July 1, the bag limit in 11A was set at 1 crab (the limit was 3 in adjacent northern waters). There was also a household annual limit for 11A of 5 king crabs per person or 10 crabs per household with 2 or more people. There was considerable backlash from local PU crabbers over the bag limit being reduced to one king crab. Commercial Fisheries staff felt it was the reasonable approach in an effort to keep the season open as long as possible, given the belief that the local effort would continue to increase, the number of crab available would be smaller, and that there is under reporting on the permits.

The BOF in early 1999 adopted new regulations that increased the allocation of king crab to the PU fishery in 11A by 5%, and directed that in years when no commercial fishery takes place, the remaining allowable harvest of king crab in 11A be reallocated to the PU fishery. When Commercial Fisheries staff determined there would not be a commercial fishery in the fall of 2000, and because local PU effort and harvest was lower than anticipated, the department liberalized the local crabbing opportunity on July 20 and then again on August 4. The daily bag

limit was increased to two and then three male king crab and the seasonal limit was increased to 10 crabs and then 20 crabs per person and 20 and then 40 crabs per household with two or more individuals. When the winter PU king crab fishery began in October, the bag limit was reduced to two king crabs, and the household winter seasonal limit was halved to 10 crab per person and 20 crabs for households with two or more PU crabbers.

Escapement Surveys

Coho Salmon

Escapement of coho salmon to five streams along the Juneau road system was monitored by multiple foot surveys whereby the number of coho salmon are counted by walking along a given reach of stream. The five streams combined provide an index of stock strength in the Juneau area and are also utilized to supplement abundance estimates of coho escapement on a regional level.

Escapements in 2000 were down from 1999. Only Montana Creek was above (slightly) the historic average, and peak counts in two index streams, Jordan and Steep, were below escapement goals (Table 20). Escapement counts were confounded by a documented presence of hatchery strays in both Jordan and Switzer creeks. Two mortalities found in Jordan Creek were both shown to be from Gastineau (Macaulay) hatchery, one being marked with a CWT, and the other by having an otolith mark.

Additional work was conducted in Switzer Creek to document the presence of hatchery fish as several hundred coho salmon were observed holding in lower Switzer Creek in early October which were thought to be hatchery strays. Although these fish left, we attempted to document if local hatchery fish were spawning in Switzer Creek by sampling fish for CWT's and otolith marks. We captured 5 CWT coho salmon with seines in the upper pond from about 30 fish sampled. Tag recoveries showed that 3 fish were from an out-breeding depression research project and 2 were from production releases of coho salmon from Gastineau (Macaulay) Hatchery. All the research releases were tagged and fin clipped, so these fish did not expand to additional fish, but only about 10% of the production fish were

Table 20.—Average peak counts of coho salmon during foot surveys of Juneau area index systems for 1981–1999 in comparison to 2000 peak counts and escapement goals.

	Jordan Creek	Montana Creek	Peterson Creek	Steep Creek	Switzer Creek
1981–1999 average	231	911	278	265	65
2000 peak count	30	961	202	88	20 ^a
2000 % of average	13	105	73	33	56
Point esc. goal	150	450	200	150	50
Esc. goal range	75–200	200–500	100–350	100–300	25–75
2000 at goal?	no	yes	yes	no	yes

^a The peak count of 50 was adjusted to 20 because of a substantial presence of hatchery strays.

tagged, and therefore possibly over 70% of the fish were from hatchery stocks. Two of three mortalities sampled later were also from hatchery stocks therefore we estimated that no more than 40% of the peak count (20 of 50) were from wild stocks.

Steelhead

Peak counts of steelhead escapement in Peterson Creek on the Juneau road system and Pleasant Bay Creek in lower Seymour Canal were again monitored in 2000 to provide an annual index of steelhead abundance. Because of the relatively low number of fish in a given steelhead population, these escapements are monitored through weekly “snorkel surveys” as opposed to the foot surveys used for monitoring coho escapements. In a snorkel survey, two observers count the number of steelhead seen while snorkeling along a given reach of stream.

Peterson Creek and Pleasant Bay Creek were selected as the best indicator streams in the Juneau area, based primarily on the relatively short length of stream accessible to returning steelhead spawners. The barrier falls on each of these two streams limits the upstream migration of steelhead to a distance that can be surveyed in its entirety in only a few hours. Additionally, they are extremely popular among sport anglers as Peterson is easily accessed from the Juneau road system and Pleasant Bay provides a larger population of fish in a pristine setting.

Because snorkel surveys of Peterson and Pleasant Bay Creeks have only been conducted since 1994 and 1996 respectively, we are still learning about variability in annual run strength and peak timing. Still, given this limitation, results from the 2000 survey were mixed. Peterson Creek counts seemed typical compared to prior years, whereas Pleasant Bay counts for each week surveyed were the lowest of any to date for those weeks (Figure 12). Moreover, the peak count of 48 was lower than any observed during all surveys from prior years.

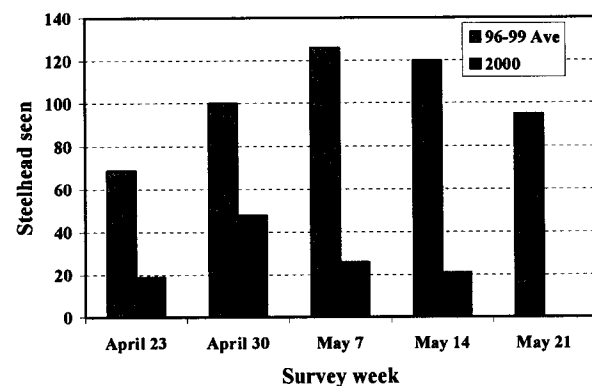


Figure 12.—Weekly steelhead escapement counts at Pleasant Bay Creek, 1996–1999 average and 2000.

Access Projects

In 2000, research and planning efforts were underway for three launch ramp improvement projects on the Juneau road system: Amalga Harbor, Douglas Harbor and the North Douglas Launch Ramp. Construction for these projects was tentatively slated for 2001. The Access Program contribution at Douglas Harbor will consist of construction of a new recreational boat launch ramp as a component of the city's harbor expansion project. Work at Amalga Harbor and North Douglas will consist of upgrades to the ramp surfaces, boarding floats and parking areas. Additional effort was directed at gathering information for a future shoreline access project at Cowee Creek.

Other Issues

Twin Lakes Water and Milfoil Management

This urban, artificial lake, with its associated issues, continued to take up staff time throughout the year. Staff from ADF&G, Juneau Parks and Recreation (P&R), and Alaska Electric Light and Power (AEL&P) met during the spring to discuss water problems. The result was an arrangement for P&R to work with AEL&P to provide water to Twin Lakes via the Salmon Creek pipe when there was no threat of violating the Federal Energy Regulatory Commission (FERC) license's instream flow requirement. P&R staff also restored normal flow through the pipe by cleaning out the upstream infiltration gallery. Due to these events and management of the pipe into the summer, the level of the lake was maintained at normal levels. This obviously affected the seasonal proliferation of milfoil in the south basin, as the growth and subsequent flowering seemed delayed by about a month, relative to the north basin. As summer progressed, however, it was clear the lake level was dropping, and when divers hired by P&R staff inspected the south basin gate valve, they discovered it had a gaping hole in it. Staff tried various stop gap measures to slow the leak, which were partially successful. In early September, the contract to replace the failing valve was let, and the lake was drained to allow detailed measurements of the structure so a new one could be built. Through the fall, the contractor was on hold for the new gate valve to arrive. During this time, the south basin was an open system to Gastineau Channel and subsequently became as saline as the

channel. In mid-December the gate valve for the south basin was installed and it became a wait-and-see affair with regard to refilling the lake. Throughout the fall, DIPAC continued to hold approximately 4,000 rearing chinook salmon that they planned to place in the lake. By mid-December, the lake had filled sufficiently for DIPAC to stock the lake. The stocking appeared to be successful.

Chinook Salmon Broodstock Development at Gastineau (Macaulay) Hatchery

The current fish genetics policy states that a particular stock of salmon cannot be used at more than three production-level hatcheries in the region. Gastineau Hatchery has been trying to change its chinook salmon stock from Andrew Creek because it is used at too many other hatcheries in Southeast Alaska. An alternative stock from King Salmon River has been under development for some time, however, for a variety of reasons, the King Salmon River stock no longer was deemed a viable stock for brood development. Rather than work toward an exemption from the genetic policy, hatchery and departmental personnel began to consider the Tahini River chinook salmon stock, which is being used in enhancement projects in the Haines and Skagway areas.

The people of Skagway, DIPAC, and departmental staff cooperated to develop a plan to place Tahini River chinook eggs taken from adult chinook salmon returning to Burro Creek and Pullen Creek hatcheries near Skagway into Gastineau Hatchery for rearing and subsequent release as smolts back in the Skagway area. The first 100,000 chinook salmon alevins were transported to Juneau in December, 1998 and held through 1999. Approximately 91,000 smolts were transferred to and released at Pullen Creek in the spring of 2000. The plan is to develop a return of chinook salmon to the Skagway area sufficient to provide enough eggs for the Gastineau hatchery of Tahini stock, as well as enhance the chinook salmon fishery in the Skagway area. In the interim, no eggs will be taken from chinook salmon returning to the Gastineau Hatchery, because of problems in separating Andrew Creek and King Salmon River fish. During this transition period, fertilized eggs will be obtained from Crystal Lake hatchery near Petersburg for stocking in Juneau.

In 1999, only 30,000 eggs from Skagway chinook returns were transported to Gastineau Hatchery. If the number of eggs obtained from chinook adults returning to the hatcheries in the Skagway area remains low, a future eggtake from wild-stock Tahini River chinook salmon might be necessary.

Auke Lake Dolly Varden and Cutthroat Trout

The outmigration of sea-run Dolly Varden and cutthroat trout from Auke Lake continued to decline in 2000 (Lum et al. 2001), but it is hard to assess what is causing this ongoing decline. Potential causes include reduced local production or production in the Auke Lake system, increased mortality while in Auke Lake, reduced marine survival, increased incidental harvest or bycatch in a local commercial fishery, annual variability in overwintering site selection, and/or increased angler-induced mortality. The fact that recent trends appear nearly identical for Dolly Varden and cutthroat trout is interesting. Perhaps the record high outmigrations in 1995, 1996, and 1997 reflected optimum conditions for survival. It is interesting to note that the 1999 and 2000 outmigrations of Dolly Varden, although substantially below those three high years, were very similar to the outmigrations measured in 1970 and 1981. Those two years were assumed to represent radically different abundance levels for local Dolly Varden. Therefore, we could be making too much out of recent declines, and this drop may reflect factors that are difficult or impossible to affect through realistic management actions.

Increasing Guided Sport Fishing Effort at Remote Streams and Lakes

Reports continued to come in from people concerned over increasing guided sport fishing activities at several remote watersheds; specifically Pavlof Harbor, Mud Bay, and Neka River. Site visits by staff were made to Pavlof and Neka rivers, but the status of the level of effort, harvest, and conflicts with other recreational anglers remained unclear. Additional visits will be needed. Owing to prior-year reports of increasing guided sport fishing effort and harvest at Mud Bay on Chichagof Island, we had asked the USFS Hoonah Ranger District if they would be willing to request guides to report fishing activity by their clients. The Juneau Ranger District has been asking guides they permit to do so but more guides are permitted out of the

Hoonah office and Mud Bay is in the Hoonah District. Sport Fish staff provided a form for the USFS to provide to guides, although the USFS made this a voluntary reporting activity. The resulting reported activity was therefore not complete but definitely showed certain guides are using the Mud Bay system repeatedly throughout the summer season. The Hoonah staff told us that they will make this reporting mandatory for the year 2000 but at this writing no information is available.

Personal Use Salmon Fisheries

The Division of Commercial Fisheries issued 636 PU salmon permits to residents of communities within the Juneau management area during 2000. Most permit holders were interested in harvesting sockeye salmon. As of January 2, 2001, 241 permits had been returned, or about 38% of the permits issued for the year. The reported harvest from these permits totaled 21 chinook salmon, 2,465 sockeye salmon, 111 coho salmon, 161 pink salmon, and 114 chum salmon. The permitted sockeye salmon personal use fisheries included the Taku River, Sweetheart Creek, Kanalku Bay, and Basket Bay. The 2000 return of sockeye salmon to Sweetheart Creek was down from recent years. This sockeye salmon return is the result of prior fry stocking in Sweetheart Lake by ADF&G when it ran Snettisham Hatchery. Since there are not many PU or sport fishing opportunities for sockeye salmon near Juneau, this fishery continued to be very popular. The reported harvest to date was 893 sockeye salmon (personal communication, CF staff, ADF&G).

HAINES / SKAGWAY AREA

The Haines/Skagway management area includes all waters from Point Sherman to the Canadian border, including Lynn Canal and all drainages entering it (Figure 13). The major fisheries in the area are in saltwater for chinook salmon and Pacific halibut and in freshwater for cutthroat trout, Dolly Varden, coho, sockeye, and pink salmon. There are two major drainages supporting substantial sport fisheries in the Haines area: the Chilkoot and Chilkat rivers. The Skagway area has limited fisheries resources and relies more on hatchery production to provide sport fishing opportunities. Permanent Sport Fish management staff consists of one Fishery Biologist III, Randolph Ericksen, stationed in Haines.

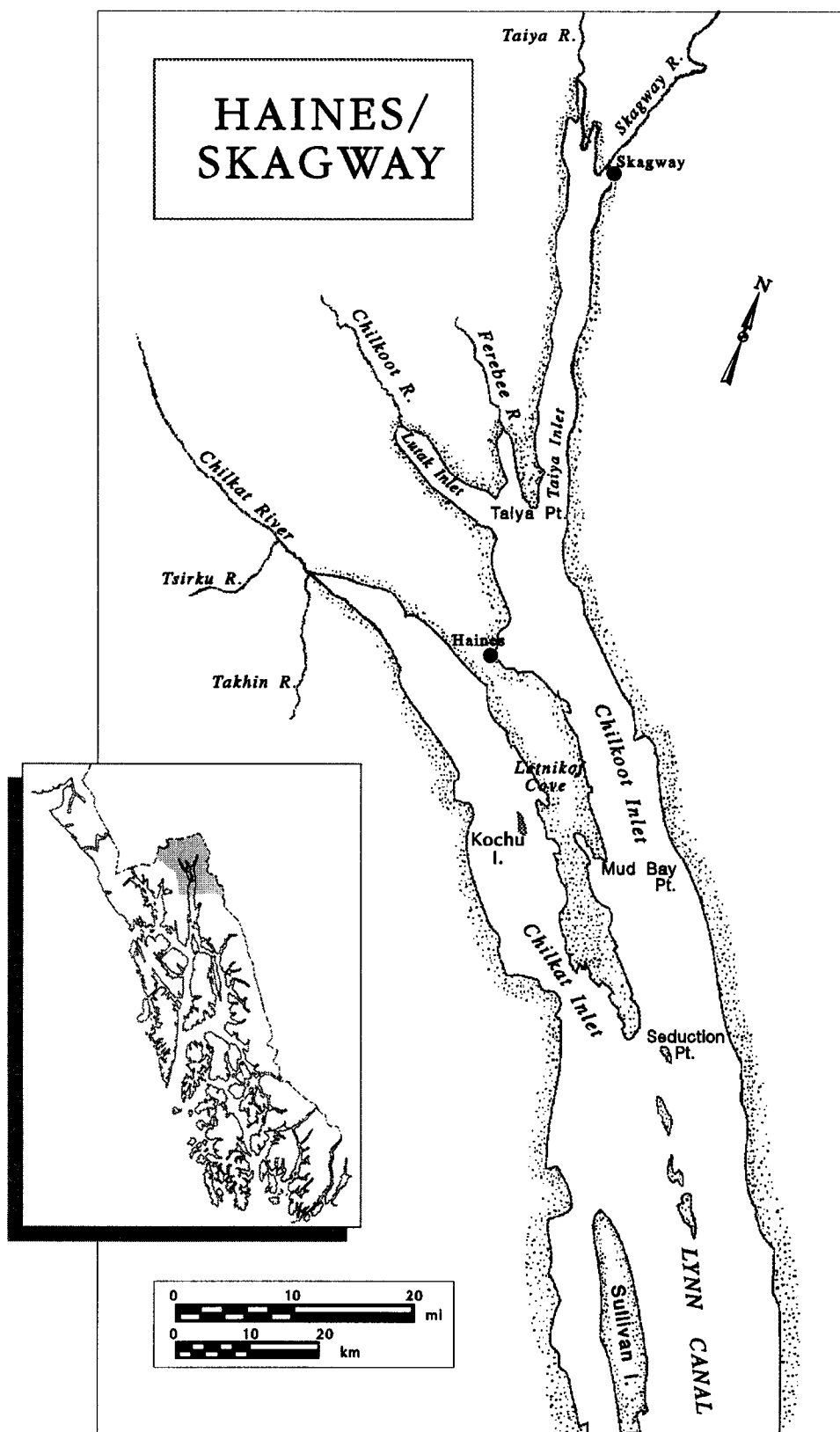


Figure 13.-Haines/Skagway management area.

Local Management and Research Programs

Chinook Salmon

The Chilkat River is considered the third or fourth largest producer of chinook salmon in Southeast Alaska (Pahlke 1997). A spring sport fishery in Chilkat Inlet near Haines targets mature chinook salmon returning to the Chilkat River. A creel survey has been used to estimate effort and chinook harvest in this fishery since 1984.

Historically, this fishery harvested up to 1,700 chinook salmon annually (Table 21). From 1981 through 1992, the escapement was monitored through survey counts on clearwater tributaries to

the Chilkat River as an index of abundance. Restrictive management of the fishery began in 1987 when high harvests of chinook salmon in the sport fishery coincided with low numbers of fish observed in spawning tributaries. The restrictions culminated with a closure of the spring fishery in 1991 and 1992.

Mark-recapture experiments have been used to estimate the abundance of large chinook salmon entering the Chilkat River since 1991. Inriver abundance of large chinook salmon has varied between 2,035 and 8,100 fish (Table 21). These studies showed that escapements were higher than expected and the fishery was reopened in 1993. Since then, the estimated harvest of chinook

Table 21.—Estimated angler effort, catch and harvest of large (≥ 28 in.) chinook salmon in the spring Haines marine boat sport fishery, 1984–2000, and abundance of large (\geq age 1.3) chinook salmon entering the Chilkat River, 1991–2000. Data through 1999 from tables in Ericksen (2000a); 2000 data from Ericksen (2001a).

Year	Salmon hrs-effort	SE	Chinook salmon				CPUE ^a	Inriver abundance ^b	SE
			Catch	SE	Harvest	SE			
1984	9,855	c	1,072	c	1,072	c	0.109		
1985	20,582	c	1,705	c	1,696	c	0.083		
1986	32,533	c	1,659	c	1,638	c	0.051		
1987	22,848	2,191	1,094	189	1,094	189	0.048		
1988	32,723	3,476	505	103	481	101	0.015		
1989	9,363	922	237	42	235	42	0.025		
1990	11,972	1,169	248	60	241	57	0.021		
1991			Fishery closed					5,897	1,005
1992			Fishery closed					5,284	949
1993	9,069	1,479	349	63	314	55	0.038	4,472	851
1994	7,682	597	269	41	220	32	0.035	6,795	1,057
1995	8,606	483	255	42	228	41	0.030	3,790	805
1996	9,596	866	367	43	354	41	0.038	4,920	751
1997	8,758	697	381	46	381	46	0.044	8,100	1,193
1998	7,546	747	222	60	215	56	0.029	3,675	565
1999	6,097	734	184	24	184	20	0.030	2,271	408
2000	4,043	532	103	34	49	12	0.025	2,035	334
1984–1990 avg.	19,982		931		922		0.050		
1993–2000 avg.	7,675		266		243		0.034	4,507	
1984–2000 avg.	13,522		600		583		0.043	4,724	

^a Catch of large (≥ 28 inches) chinook salmon per salmon hour of effort.

^b Abundance of large (\geq age 1.3) chinook salmon entering the Chilkat River. No estimates available prior to 1991.

^c No variances available for 1984–1986.

salmon in the spring fishery has averaged about 250 fish (Table 21) despite liberalized harvest regulations. It is unclear whether the high harvests observed during the mid-1980s were the result of higher effort, larger returns of chinook salmon to the Chilkat River, or both. The 2000 effort, catch, and harvest of Chilkat River chinook salmon were the lowest on record.

Management of Chilkat River chinook salmon has been largely passive in recent years. For example, Chilkat Inlet off the mouth of the river is closed to sport fishing April 15 to July 15 by regulation. However, our goal is to take more active management in the future. Beginning in 1998, we began forecasting the return of large chinook salmon to Lynn Canal based on the previous year's sibling return (e.g. the return of age 1.3 fish in 1997 was used to forecast the return of age 1.4 fish in 1998). Unlike previous forecasts, the 2000 pre-season forecast of 4,889 (80% CI = 3,505–6,273) was very different than the post-season estimate (2,470, SE = 408) of the return. If future forecasts prove reliable, we plan to develop a management plan for Chilkat River chinook salmon that includes sport, commercial, and subsistence fisheries.

The Burro Creek (operated by Burro Creek Farms) and Jerry Myers (operated by the Skagway High School) hatcheries have been releasing chinook salmon smolts in the Skagway area for a number of years (Table 22). These releases were increased from 1992 to 1994 under an agreement with the Hidden Falls hatchery operated by NSRAA. Hidden Falls was allowed to discontinue use of the Tahini River brood stock under the condition that the remaining brood be released in Taiya Inlet near Skagway. As a result, the number of hatchery chinook salmon returning to the Skagway area increased for several years. In 1998, Burro Creek hatchery sustained damage due to a flood and subsequent fire. As a result, all eggs were transferred to Gastineau hatchery. The resulting relatively large number of smolt (91,600) were released in Pullen Creek in 2000.

A growing charter boat industry targeting these hatchery fish has taken advantage of increases in the number of cruise ship passengers arriving in Skagway. Presently, no funding is allocated to sampling chinook salmon in the Skagway harvest for CWTs. However, during 1999 and 2000, one

Table 22.—Number of hatchery chinook salmon smolts released in the Skagway area by brood year and facility, 1987–2000.

Facility	Brood year	Date released	Number of smolt released
Jerry Myers	85	6/16/87	6,060
Jerry Myers	86	6/10/88	4,659
Jerry Myers	87	6/10/89	1,730
Jerry Myers	88	6/8/90	6,431
Jerry Myers	89	6/19/91	7,152
Jerry Myers	90	6/10/92	11,905
Hidden Falls	90	5/20/92	30,223
Jerry Myers	91	6/11/93	12,859
Hidden Falls	91	5/22/93	56,415
Burro Creek	91	6/3/93	8,572
Jerry Myers	92	6/11/94	1,650
Hidden Falls	92	5/20/94	38,789
Burro Creek	92	6/5/94	8,749
Jerry Myers	93	6/10/95	5,595
Burro Creek	93	6/10/95	1,903
Jerry Myers	94	5/24/96	1,507
Burro Creek	94	6/15/96	34,895
Burro Creek	95	6/21/97	12,815
Jerry Myers	96	6/10/98	8,631
Burro Creek	96	6/14/98	15,956
Jerry Myers	97	5/31/99	1,856
Gastineau	98	6/02/00	91,618

one person traveled to Skagway on a weekly basis as time allowed to sample for CWTs. During 2000, 18% (SE = 5%) of the small and 13% (SE = 4%) of the large chinook salmon sampled were missing adipose fins (Table 23). Although all of the successfully decoded tags were of Alaska hatchery origin, only 50% were from Skagway area releases.

Coho Salmon

The Chilkat River supports one of the largest freshwater sport fisheries for coho salmon in the Southeast region, with annual harvests averaging about 1,000 coho salmon. This system also contributes a significant number of coho salmon to commercial troll, gillnet, and seine fisheries in

Table 23.—Number of small and large chinook salmon sampled for missing adipose fins at the Skagway Boat Harbor during 2000.

Date	Examined for ad-clips		Ad-clipped	
	Small	Large	Small	Large
6/14	2	2	0	0
6/21	0	0	0	0
6/28	9	1	2	1
7/04	2	1	0	0
7/11	1	0	0	0
7/18	1	1	0	1
7/25	9	7	1	1
8/01	11	17	2	0
8/08	9	10	2	1
8/16	6	1	2	0
Total	50	40	9	3

northern Southeast Alaska. Research conducted during the 1980s on coho salmon stocks in Lynn Canal suggests that these stocks are subjected to very high (over 85%) exploitation rates (Elliott and Kuntz 1988, Shaul et al. 1991). We initiated a program to coded wire tag coho salmon smolt in the Chilkat River in 1999. During the spring of 1999, we tagged 25,915 coho smolts in the drainage. These fish returned as adults during the fall of 2000 and were sampled in various fishery harvests throughout Southeast Alaska, as well as in Chilkat River fish wheels. Results of this study indicate that 1,237,056 (SE = 219,715) coho smolts emigrated from the Chilkat River in 1999, and most of the estimated harvest in 2000 occurred in the commercial troll and Lynn Canal drift gillnet fisheries (Ericksen 2001b). During the spring of 2000, we tagged 25,016 coho salmon smolts in the drainage. These fish will return as adults in 2001.

Peak survey counts of coho salmon to the Chilkat River in 2000 were above the long-term average. (Table 24). The current management program for Chilkat River coho salmon relies on postseason monitoring of escapements by an “index system”, where survey counts are conducted on four streams: Clear Creek, Spring Creek, Tahini River, and Kellsall River (Table 24). The number of adult coho spawners is counted in one day during peak spawning. These index counts appear to reflect

abundance trends in the Chilkat drainage given comparisons with two years of mark-recapture estimates (Table 24). However, they represent only 3.8% of the total escapement in the drainage, making them a relatively poor management tool.

Sockeye Salmon

The Chilkoot Lake and River sport fishery is one of the largest freshwater sport fisheries in Southeast Alaska. Sockeye salmon returning to the Chilkoot River drainage support important sport, commercial, and subsistence fisheries in the area. CF Division monitors the escapement of sockeye salmon into the drainage using a weir. Weir counts have been below the escapement goal (total goal range = 52,500–91,500) for the past 8 years (Figure 14). Although the sport fishery typically harvests fewer than 1,000 sockeye salmon per year, it has been very popular with residents and visitors to the area.

Pink Salmon

Escapements of pink salmon into the Chilkoot River during 1998 and 1999 were the highest on record (Figure 15). The 2000 escapement remained above average. The large escapements are primarily a result of restrictive management of the Lynn Canal commercial gillnet fishery to protect Chilkoot sockeye salmon.

Dolly Varden

The Chilkoot Lake and River sport fishery maintains the largest harvest of Dolly Varden in the region. This harvest peaked in 1985 at over 14,000 Dolly Varden and steadily declined until 1994 (Figure 16), suggesting the population might have been overexploited. As a result of this decline, the bag limit in the drainage was reduced from 10 to 2 per day in 1994. Since 1994, the harvest has leveled out at about 1,400 Dolly Varden per year (Figure 16). Because of the importance of the Chilkoot Dolly Varden sport fishery, research was conducted on the population during 1997 and 1998. During the winter of 1997–1998, we estimated that 109,152 (SE = 21,065) Dolly Varden ≥ 220 mm FL overwintered in Chilkoot Lake (Ericksen 2000b). A per-recruit analysis of the population indicated that at similar population levels, the harvest should not exceed 7,300 fish annually (Ericksen 2000b). The harvest in 2000 was <1,000 fish (Figure 16). Thus, current harvest levels are well within acceptable limits.

Table 24.—Peak counts of coho salmon during surveys of four index streams to the Chilkat River, 1987–2000, and mark-recapture estimates of escapement, 1990 and 1998.

Year	Peak survey counts					Mark-recap. estimate	SE	Ratio
	Spring Creek	Kelsall River	Tahini River	Clear Creek	Combined			
1987	84	184	696	23	987	80,700	9,984	0.0372
1988	83	152	539	35	809			
1989	48	182	981	134	1,345			
1990	79	328	2,448	150	3,005			
1991	176	392	1,707	135	2,410			
1992	174	266	1,077	700	2,217			
1993	95	115	947	460	1,617			
1994	398	440	4,419	381	5,638	37,132 ^a	7,432	0.0388
1995	253	178	1,029	177	1,637			
1996	180	157	381	290	1,008			
1997	204	129	643	250	1,226			
1998	264	262	638	275	1,439			
1999	324	202	930	195	1,651	58,916		0.0380
2000	302	551	1,302	420	2,575			
Average	190	253	1,267	259	1,969			

^a 1998 mark-recapture estimate from Ericksen (1999).

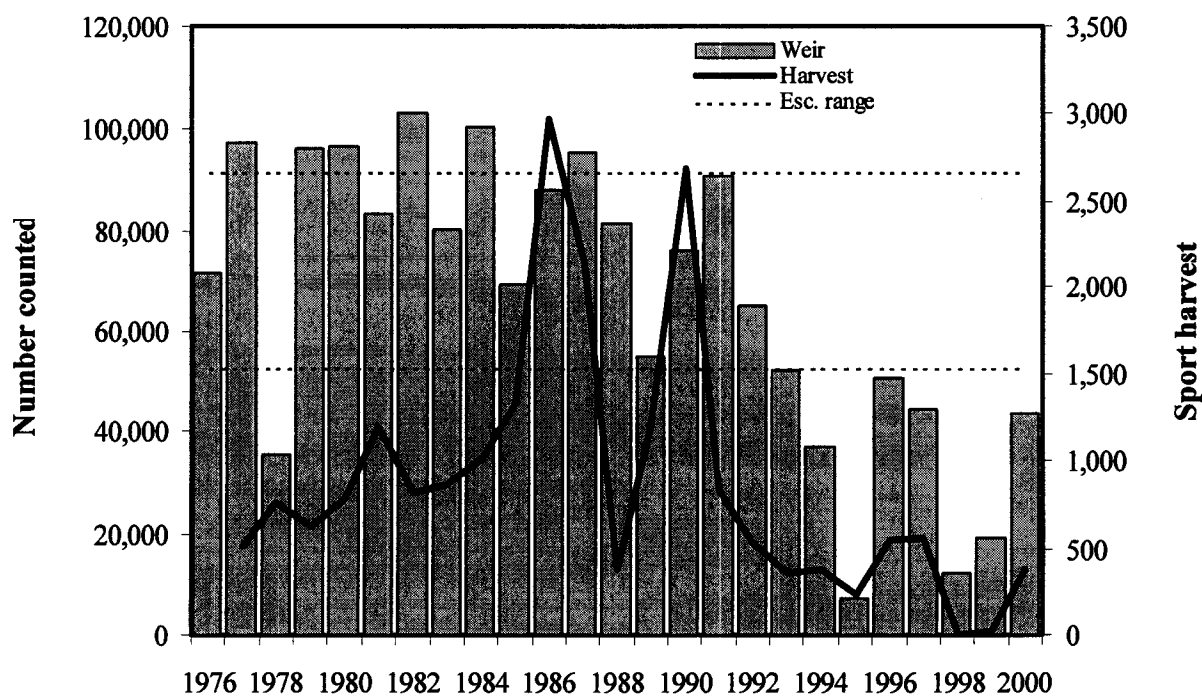


Figure 14.—Number of sockeye salmon counted through the Chilkoot River weir (1976–2000) and total harvest in the Chilkoot River/Lake sport fishery (1977–2000).

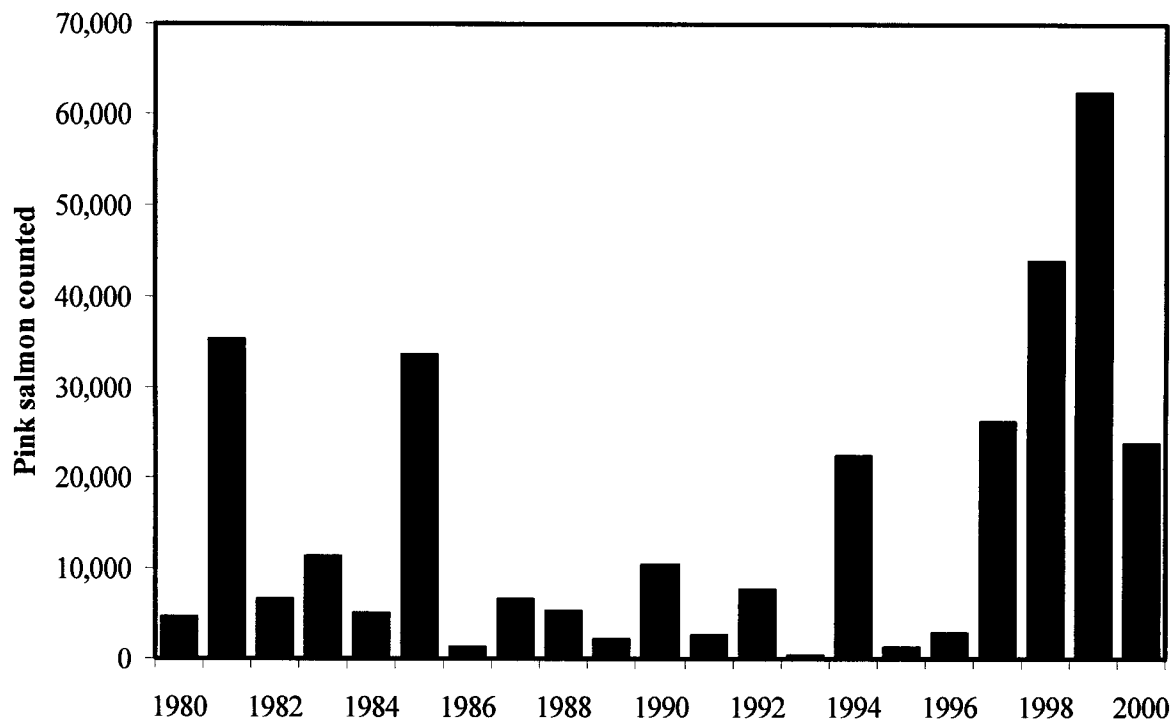


Figure 15.—Number of pink salmon counted through the Chilkoot River weir (1980–2000).

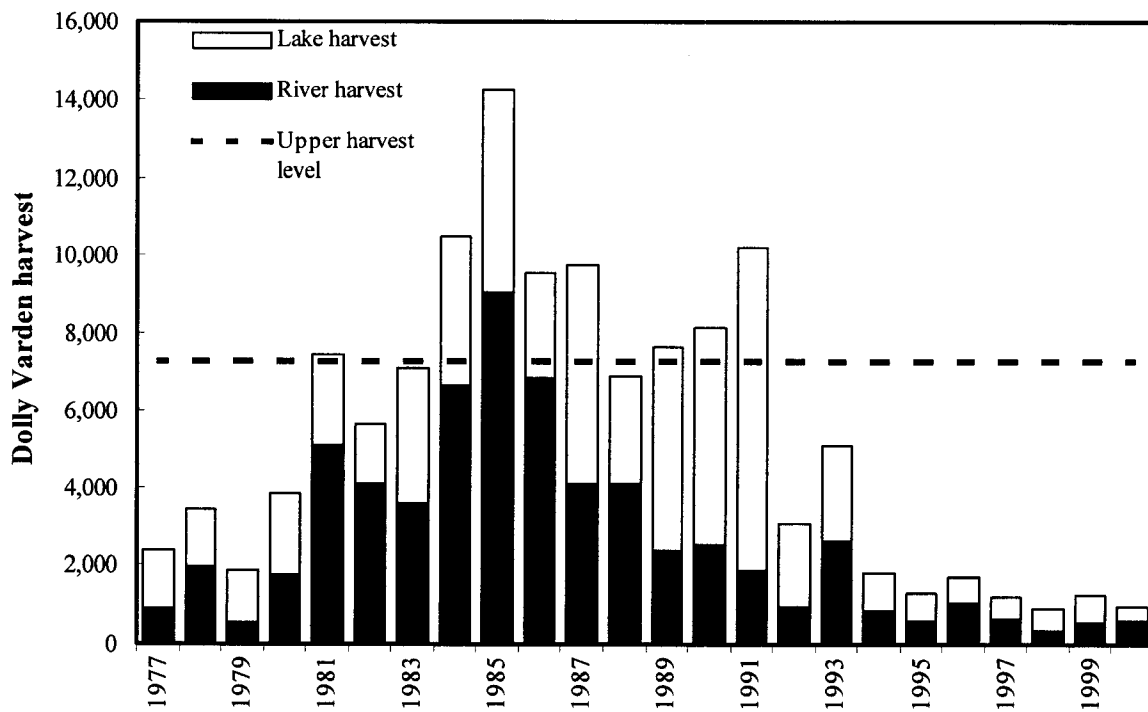


Figure 16.—Harvest of Dolly Varden in the Chilkoot River/Lake sport fishery, 1977–2000.

Management Actions

Skagway Chinook Salmon Terminal Harvest Area Management

One E.O. was issued during 2000 related to sport fishing for hatchery chinook salmon returning to the Skagway area. The purpose of this E.O. was to liberalize bag and possession limits for chinook salmon and to close small areas to sport fishing to allow sufficient numbers of chinook salmon to escape for broodstock needs.

Anglers fishing in Taiya Inlet north of the latitude of Taiya Point were allowed to keep small chinook salmon (E.O. 1-11-00). The bag and possession limit in Taiya Inlet was 1 chinook salmon 28 inches or more in length, and 2 chinook salmon less than 28 inches in length. This area was opened to allow harvest of surplus hatchery-produced chinook salmon released at Burro Creek and Pullen Creek.

Chinook salmon returning to Pullen Creek must migrate into the stream through a culvert accessible only during high tide. Hatchery fish must therefore mill in salt water off the mouth of the stream until a sufficient high tide allows them to pass through the culvert. A similar situation occurs at the mouth of Burro Creek where fish mill in salt water before migrating upstream. These fish are vulnerable to sport fishing in these areas. To ensure that enough chinook salmon entered Pullen Creek and Burro Creek for brood stock needs, the area of Taiya Inlet north of a line extending from a department marker on the Broadway Dock, to a department marker on the ore terminal dock; and the area enclosed in a 1,500 foot radius around the mouth of Burro Creek were closed to sport fishing from June 10 through August 31, 2000 (E.O. 1-11-00).

Extension of the Chilkat Inlet Area Chinook Salmon Closure

The sport fishing closure for chinook salmon in Chilkat Inlet was extended through July 23 to protect mature chinook salmon returning to spawn in the Chilkat River (E.O. 1-24-00). Sport fishery catch data and information collected in the lower Chilkat River indicated that the return of chinook salmon was weak and possibly later than normal.

This information confirmed that the pre-season forecast of Chilkat River chinook salmon return was too high. In addition, we received numerous reports by subsistence fishers in Chilkat Inlet that indicated chinook salmon were holding in saltwater later than normal.

Chilkoot Drainage Sockeye Closures

Four E.O.'s were issued during 2000 related to sport fishing for sockeye salmon in the Chilkoot drainage. The first closed the Chilkoot sport fishery to retention of sockeye salmon effective June 23 through October 15 (E.O. 1-18-00). A total of 1,310 sockeye salmon were counted through the Chilkoot River weir by June 20. This was well below the 10-year average of 3,962 sockeye salmon by that date. At that time, the department projected the early return of sockeye salmon to the Chilkoot Lake and River to be well below the early-run escapement goal of 16,500-31,500. Commercial catches of Chilkoot sockeye salmon in the drift gill net fishery in Lynn Canal confirmed that the return was weak, and additional restrictions were also implemented on that fishery to protect sockeye salmon returning to the drainage. To boost escapement into the drainage, anglers fishing Chilkoot Lake and River were not allowed to retain sockeye salmon.

The second E.O. closed sockeye salmon spawning areas to sport fishing from July 20 through October 15 (E.O. 1-25-00). By July 16, 11,596 sockeye salmon had been counted through the Chilkoot River weir, well below the 10-year average of 14,265 sockeye salmon by that date. Therefore, all streams flowing into Chilkoot Lake and designated sockeye salmon spawning areas in the lake were closed to sport fishing to reduce incidental catch and release mortality.

The last two E.O.'s concerning Chilkoot River sockeye salmon increased bag and possession limits in the Chilkoot River below the weir. By August 1, 15,866 late-run sockeye salmon had been counted through the Chilkoot River weir, and the late return was projected to be above the lower range of the escapement goal (34,000-60,000). Therefore, anglers fishing the Chilkoot River below the weir were allowed to keep one sockeye salmon per day, effective August 3 (E.O. 1-29-00). By August 17, 28,319 late-run sockeye

salmon had been counted through the Chilkoot River weir, and the late return was projected to exceed 50,000 fish. Thus, the bag limit for anglers fishing the Chilkoot River below the weir was increased to six sockeye salmon, effective August 19 (E.O. 1-30-00). Chilkoot Lake and the river above the weir remained closed to retention of sockeye salmon, and sockeye salmon spawning areas remained closed to sport fishing to protect early return fish already in the drainage.

Access Projects

Discussions continued with the City of Haines regarding the Portage Cove boat launch and with Division of Parks regarding improvements to the Chilkat State Park boat launch. In addition, staff spent several days flagging the route for the Walker Lake access trail to be constructed in 2001.

Other Issues

Land Use

Work proceeded on the Haines Highway realignment project. Construction of the first phase (Muncaster Creek to Little Boulder Creek) was completed and the second phase of the project (Little Boulder Creek to the border) continued. In addition, work on the Skagway Airport expansion was completed. All of these projects impacted fish habitat and required extensive mitigation work. This included extending a clearwater stream and creation of wetlands at 37 mile on the inside of the new highway.

Two hydropower projects near Skagway were active during 2000. Goat Lake Hydro went into operation in December of 1997 and planning and design continued on the Otter (Kasidaya) Creek Hydro project. Goat Lake was stocked with Arctic grayling in 1994 and 1995. These fish have survived and successfully spawned. It is unclear how a spring drawdown will affect future spawning success of the grayling. ADF&G requested that Alaska Power and Telephone (AP&T) conduct studies to determine whether grayling can access the spawning stream during the spring drawdown period. On July 14, 2000, staff traveled to Goat Lake with AP&T personnel to look for spawning grayling and evidence of

spawning in 1999. The lake had been drawn down (less than in 1999) but had refilled to about 1–2 ft below normal capacity. No grayling were observed in the main inlet stream, but it appeared they could access it at this level. Five adult grayling were captured with a variable mesh gillnet and hook and line in the lake off the main inlet stream, and several hundred younger fish were observed in shallow coves of the lake. Six of these were captured but no yearling grayling were sampled. This suggests that adult grayling were not able to spawn in 1999 due to the drawdown. Kasidaya Creek is a high gradient, glacial stream that flows directly into Taiya Inlet. Fish habitat is limited to the intertidal reaches of the stream.

Skagway Chinook Enhancement

Skagway residents are actively pursuing ways to increase the number of chinook salmon released in their area. With the conclusion of releases of Hidden Falls fish and the imminent sale and/or closure of the Burro Creek Hatchery, another rearing facility was needed to continue smolt releases in the area. Douglas Island Pink and Chum, Inc. (DIPAC) is currently working with the city of Skagway to cooperatively develop the Tahini River broodstock for potential use in Skagway and at DIPAC's Gastineau (Macaulay) facility near Juneau. DIPAC is also working with the city of Skagway on plans to construct and operate a new facility located on the mouth of Pullen Creek. The facility would replace the existing Jerry Myers Hatchery and be available to Skagway High School students to continue their hatchery curriculum. The hatchery would recover their costs by charging tourists for hatchery tours. DIPAC released 91,618 chinook smolt in Pullen Creek in 2000 (Table 22) and was holding about 33,000 chinook fry (1999 brood year) and 108,000 chinook eggs (2000 brood year) in 2000 for release in the Skagway area. In addition, about 4,500 chinook eggs were being incubated at the Jerry Myers Hatchery in Skagway.

YAKUTAT AREA

The Yakutat management area includes all waters of Alaska draining into the Gulf of Alaska from Cape Suckling to Cape Fairweather (Figure 17). The major fisheries of the Yakutat area are in saltwater for Pacific halibut, coho salmon, and chinook salmon, and in freshwater for steelhead, chinook salmon, coho salmon, and sockeye salmon. Permanent Sport Fish management staff consists of one Fishery Biologist III, Robert Johnson, stationed in Yakutat.

2000 Board of Fisheries Regulation Changes

The BOF changed the Yakutat area freshwater "small" chinook salmon definition to include fish up to 20 inches. This will provide better sport use of 1-ocean "jacks" excess to spawning needs as the bag limit for these fish is 10. The previous upper size limit for small chinook salmon was 16 inches.

The BOF also closed a 3-mile stretch of the Situk River to all fishing between the Situk River Nine-Mile Bridge and Situk Lake. This closure will be in effect from April 15 through May 15 to protect spawning steelhead.

The BOF also closed a small portion of the Ankau Lagoon to fishing from August 15 through September 30 to protect coho salmon returning to spawn.

Local Management and Research Programs

Yakutat Marine Catch Sampling and Situk River Creel

The Yakutat area supports growing recreational fisheries in marine and fresh waters, for a variety of salmonid and bottomfish species. Marine boat fishery effort nearly doubled from 1993 to 1997. Coho salmon harvests in marine waters more than tripled from 1,500 fish in 1993 to 5,200 fish in 1997. Additionally, lingcod and rockfish harvests doubled from 1993 to 1999, and Pacific halibut harvests increased approximately 60% from the 1990 to 1993 harvest average. As the number of anglers and harvest increase, stock composition, harvest timing, and other population parameters require assessment. Accordingly, a catch sampler

monitored the marine boat fishery at the Yakutat boat harbor and recorded 2,400 angler trip interviews during 2000. As a result, 378 chinook salmon, 2,023 coho salmon, 1,407 lingcod, and 2,798 halibut were sampled; over one-half of the estimated total Yakutat marine sport harvest of Pacific halibut and lingcod. Additionally, 52 coded-wire-tagged salmon were recovered. Another technician interviewed anglers from the Situk River chinook salmon fishery which resulted in an estimated sport harvest of 1,014 large (≥ 28 inches in length) chinook salmon. Scale samples were also collected from chinook salmon harvested in the Situk fishery.

Situk River Steelhead Escapement Monitoring

The Situk River produces the largest run of steelhead in Southeast Alaska. Recent runs of steelhead to the river have varied between about 5,800 and 9,200 fish. This is the largest known spring run of steelhead in Alaska, however, Karluk River in Southwest Alaska supports a fall steelhead population of similar magnitude. Low steelhead numbers in 1991 and 1992 in the Situk River helped prompt conservation concerns that resulted in regional regulations to reduce harvests to a minimum (i.e., artificial unbaited lures only, with only one fish ≥ 36 inches in total length per day, and two per season).

Steelhead abundance is currently monitored by counting emigrant adults (kelts) at a weir and by counting adults in float surveys (Johnson and Jones 2001). Weir kelt counts from 1994 through 1999 suggest an overall improved run strength. The Situk steelhead population attracts a substantial number of anglers. During 1999, it was estimated that more than 14,000 steelhead were caught in the Situk River and 82 of these fish were harvested. Between May 8 and August 15, 2000, 6,709 steelhead were counted as they emigrated downstream through a weir located 1.2 miles upstream of the Lower Landing on the Situk River. This count was down from the 9,204 steelhead counted in 1999, which was the highest count since the early 1950's. The peak of emigration occurred May 29, when 730 steelhead were counted downstream through the weir.

Four total river float surveys from Situk Lake downstream were conducted during the spring of 2000. The highest float survey index count

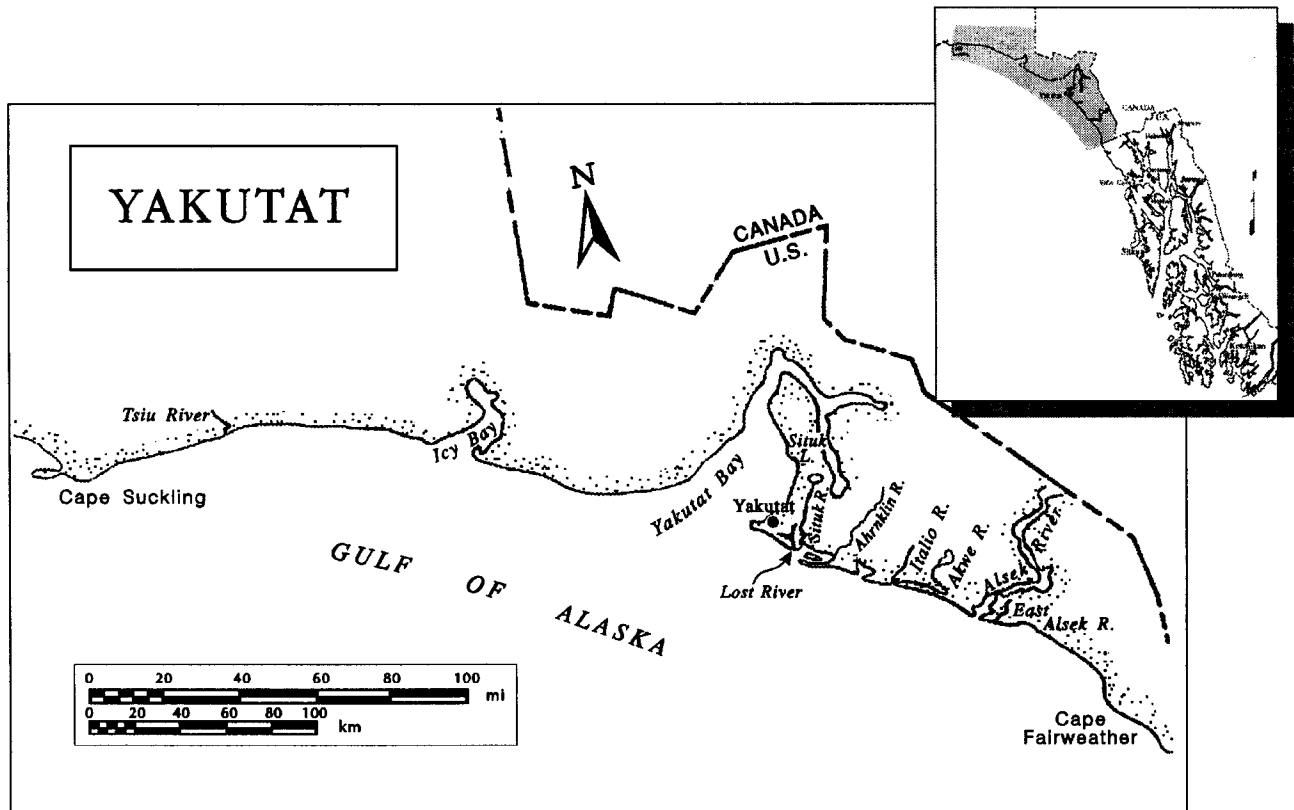


Figure 17.—Yakutat management area.

occurred on May 18 and 19 when 3,557 steelhead were counted in the river (53% of total weir count), during fair to good conditions. In general, fish were concentrated within the lower river from the weir (about river mile 1.2) upstream to river mile 8.

Alsek River Chinook Salmon Project

The abundance of chinook salmon returning to the Alsek River was estimated in 2000 with an ongoing mark-recapture program (Pahlke and Etherton 2001.). The preliminary estimate of chinook salmon escapement for the Alsek drainage was 9,000 fish, down from about 11,600 estimated in 1999. A total of 1,365 chinook salmon were counted at the Klukshu River weir in the Yukon Territory, about 15% of the estimated total spawning escapement. This is similar to previous years where the weir count has represented between 13% and 24% of the estimated total escapement to the drainage.

Management Actions

Situk River Steelhead Management

Spawning steelhead in a three-mile section of the Situk River above the Nine Mile Bridge are easily observed and very vulnerable to recent increases in anglers. As a result, the Situk River, between department markers located two miles upstream from the Nine Mile Bridge and department markers located two miles downstream from Situk Lake, was closed to all fishing from April 19 through May 15, 2000 (E.O. 1-3-00) to protect steelhead during the peak of the spawning season. As noted above, this area closure became a permanent regulation as a result of BOF action during the 2000 meeting.

Situk River Chinook Salmon Management

The Situk River is managed for a chinook salmon escapement of 450 to 750 large (age 3-ocean or older) fish with a mid-point of 600 large chinook

salmon as the goal. Returns are highest when escapements are between 600 and 1,100 large spawners, and returns are lower when escapements are above or below that range; the magnitude of reduction dependent on how far away.

Managers projected that the 2000 Situk River chinook salmon escapement goal would exceed 750 large fish early in the season due in part to excellent ocean survival rates. The bag limit in the Situk River for chinook salmon ≥ 20 inches in length was therefore set at two fish per day and two in possession on June 6, 2000 (E.O. 1-08-00). The chinook fishery was monitored with a sampling program to estimate chinook salmon harvest and age at length in the sport fishery.

After several weeks of monitoring inseason escapement, managers determined that the 2000 Situk chinook salmon run would exceed 4,000 large fish. In order to harvest the chinook salmon surplus above and beyond the escapement goal while providing protection for upstream resident rainbow trout stocks, use of bait for chinook salmon was allowed downstream from the Nine Mile Bridge from June 21 through August 15, after which coho salmon were expected to begin returning (E.O. 1-17-00). The final 2000 Situk River chinook salmon escapement was 2,518 large fish.

Situk River Sockeye Salmon Management

The escapement range for sockeye salmon in the Situk River is 30,000–70,000 fish. The specific escapement goal is 50,000 fish. The escapement projection for the season on July 24 was 39,000 fish, which was within the escapement range but below the goal. Daily weir counts dropped to an unacceptable level by July 24, and harvest reductions in both the sport and commercial fisheries were deemed necessary to achieve the escapement goal. Therefore, retention of sockeye salmon in the Situk River drainage was prohibited, effective July 25 (E.O. 1-27-00). By July 28, Situk River weir counts showed an increasing trend with an escapement projection for the season back near the escapement goal. Accordingly, sockeye salmon limits on the Situk River were restored to three fish per day and in possession, effective July 29 (E.O. 1-28-00). The

final Situk River sockeye escapement for 2000 was 41,554 fish.

Surveys

Besides the steelhead escapement survey work on the Situk River discussed above, the Old Situk River was surveyed on October 20, 2000 and 1,064 coho were observed. This was one of the highest numbers observed for this date and system. Precipitation during late September and early October affected the ability to perform other escapement surveys. Approximately 33 inches of rain fell in October; much of this amount fell during the first half of the month.

Access Projects

Improvements to the Yakutat boat harbor launch site began. Land clearing and slope grading are nearly complete. Recently completed trails along the Situk River up from the Lower Landing and near the Middle Situk cabins were inspected.

Other Issues

Development of a Local Area Management Plan for Pacific halibut by local user groups continued at a slow pace. This plan will eventually be submitted to the BOF. A revision of the Situk River Management Plan is also in the works with the USFS, Yakutat Tlingit Tribe, and the City and Borough of Yakutat participating.

ACKNOWLEDGMENTS

We would like to thank all the other ADF&G Division of Sport Fish management, research, and administrative staff in the Southeast Alaska region who contribute so much time and effort to support sport fishing activities. Alma Seward is specifically acknowledged for final formatting of the document along with generating maps used in the report.

LITERATURE CITED

- Bentz, R., P. Suchanek, M. Bethers, S. Hoffman, A. Schmidt, M. Dean, and R. Johnson. 1996. Area management report for the sport fisheries of Southeast Alaska, 1994. Alaska Department of Fish and Game, Fishery Management Report No. 96-1, Anchorage.

- Bernard, D. R., S. A. McPherson, K. A. Pahlke, and P. Etherton. 2000. Optimal production of chinook salmon from the Stikine River. Alaska Department of Fish and Game, Fishery Manuscript No. 00-1, Anchorage.
- Der Hovanisian, J. A. and R. P. Marshall. 1995. Abundance and size of cutthroat trout at Baranof Lake, Southeast Alaska, 1994. Alaska Department of Fish and Game, Fishery Data Series No. 95-27, Anchorage.
- Elliott, S. T. and K. J. Kuntz. 1988. A study of coho salmon in Southeast Alaska: Chilkat Lake, Chilkoot Lake, Yehring Creek, and Vallenar Creek. Alaska Department of Fish and Game, Fishery Data Series No. 62, Juneau.
- Ericksen, R. P. 1999. Abundance of coho salmon in the Chilkat River in 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-29, Anchorage.
- Ericksen, R. P. 2000a. Sport fishing effort, catch, and harvest, and inriver abundance of Chilkat River chinook salmon near Haines, Alaska in 1999. Alaska Department of Fish and Game, Fishery Data Series No. 00-28, Anchorage.
- Ericksen, R. P. 2000b. Stock assessment of Dolly Varden in the Chilkoot Lake drainage, 1997–1998. Alaska Department of Fish and Game, Fishery Data Series No. 00-14, Anchorage.
- Ericksen, R. P. 2001a. Sport fishing effort, catch, and harvest, and inriver abundance of Chilkat River chinook salmon near Haines, Alaska in 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-12, Anchorage.
- Ericksen, R. P. 2001b. Smolt production and harvest of coho salmon from the Chilkat River, 1999–2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-17, Anchorage.
- Frenette, B., M. Jaenicke, and P. Suchanek. *Unpublished*. Progress report for the saltwater sport charter vessel program in Southeast Alaska during 1998 and 1999. Located at: Alaska Department of Fish and Game, Division of Sport Fish, Juneau.
- Frenette, B., P. Suchanek, D. Hubartt, and M. Jaenicke. *Unpublished*. Overview of the sport fishery for chinook salmon in Southeast Alaska through 1999. Located at: Alaska Department of Fish and Game, Division of Sport Fish, Juneau.
- Howe, A. L., G. Fidler, and M. J. Mills. 1995. Harvest, catch, and participation in Alaska sport fisheries during 1994. Alaska Department of Fish and Game, Fishery Data Series No. 95-24, Anchorage.
- Howe, A. L., G. Fidler, A. E. Bingham, and M. J. Mills. 1996. Harvest, catch, and participation in Alaska sport fisheries during 1995. Alaska Department of Fish and Game, Fishery Data Series No. 96-32, Anchorage.
- Howe, A. L., R. J. Walker, C. Olnes, K. Sundet, and A. E. Bingham. 2001a. Revised Edition: Harvest, catch and participation in Alaska sport fisheries during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-29(revised), Anchorage.
- Howe, A. L., R. J. Walker, C. Olnes, K. Sundet, and A. E. Bingham. 2001b. Revised Edition: Harvest, catch and participation in Alaska sport fisheries during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-25(revised), Anchorage.
- Howe, A. L., R. J. Walker, C. Olnes, K. Sundet, and A. E. Bingham. 2001c. Revised Edition: Participation, catch, and harvest in Alaska sport fisheries during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-41(revised), Anchorage.
- Howe, A. L., R. J. Walker, C. Olnes, K. Sundet, and A. E. Bingham. 2001d. Participation, catch, and harvest in Alaska sport fisheries during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 01-08, Anchorage.
- Hubartt, D. J., A. E. Bingham, and B. J. Frenette. 2001. Harvest estimates for selected marine sport fisheries in Southeast Alaska during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-34, Anchorage.
- Jaenicke, M. J., and B. J. Frenette. *Unpublished*. Summary data from the sport fishery for Pacific halibut in the IPHC Area 2C portion of Southeast Alaska, 2000. Located at: Alaska Department of Fish and Game, Division of Sport Fish, Juneau.
- Johnson, R. E. and J. D. Jones. 1998. Southeast Alaska steelhead studies, 1997: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 98-45, Anchorage.
- Johnson, R. E. and J. D. Jones. 2001. Southeast Alaska steelhead studies, 2000: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 01-20, Anchorage.
- Jones, J. D. 1994. Harvest surveys at U.S. Forest Service public use cabins in Southeast Alaska, 1993. Alaska Department of Fish and Game, Fishery Data Series No. 94-39, Anchorage.
- Lum, J. L., J. D. Jones, and S. G. Taylor. 2001. Dolly Varden and cutthroat trout populations in Auke Lake, Southeast Alaska, during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-33, Anchorage.

- Mills, M. J. 1979. Alaska statewide sport fish harvest studies. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1978–1979, Project F-9-11, 20 (SW-I-A), Juneau.
- Mills, M. J. 1980. Alaska statewide sport fish harvest studies. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1979–1980, Project F-9-12, 21 (SW-I-A), Juneau.
- Mills, M. J. 1981a. Alaska statewide sport fish harvest studies (1979). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1980–1981, Project F-9-13, 22 (SW-I-A), Juneau.
- Mills, M. J. 1981b. Alaska statewide sport fish harvest studies (1980). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1980–1981. Project F-9-13, 22 (SW-I-A), Juneau.
- Mills, M. J. 1982. Alaska statewide sport fish harvest studies (1981). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1981–1982, Project F-9-14, 23 (SW-I-A), Juneau.
- Mills, M. J. 1983. Alaska statewide sport fish harvest studies (1982). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1982–1983, Project F-9-15, 24 (SW-I-A), Juneau.
- Mills, M. J. 1984. Alaska statewide sport fish harvest studies (1983). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1983–1984, Project F-9-16, 25 (SW-I-A), Juneau.
- Mills, M. J. 1985. Alaska statewide sport fish harvest studies (1984). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1984–1985, Project F-9-17, 26 (SW-I-A), Juneau.
- Mills, M. J. 1986. Alaska statewide sport fish harvest studies (1985). Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1985–1986, Project F-10-1, 27 (RT-2), Juneau.
- Mills, M. J. 1987. Alaska statewide sport fisheries harvest report (1986). Alaska Department of Fish and Game, Fishery Data Series No. 2, Anchorage.
- Mills, M. J. 1988. Alaska statewide sport fisheries harvest report (1987). Alaska Department of Fish and Game, Fishery Data Series No. 52, Anchorage.
- Mills, M. J. 1989. Alaska statewide sport fisheries harvest report (1988). Alaska Department of Fish and Game, Fishery Data Series No. 122, Anchorage.
- Mills, M. J. 1990. Harvest and participation in Alaska sport fisheries during 1989. Alaska Department of Fish and Game, Fishery Data Series No. 90-44, Anchorage.
- Mills, M. J. 1991. Harvest, catch, and participation in Alaska sport fisheries during 1990. Alaska Department of Fish and Game, Fishery Data Series No. 91-58, Anchorage.
- Mills, M. J. 1992. Harvest, catch, and participation in Alaska sport fisheries during 1991. Alaska Department of Fish and Game, Fishery Data Series No. 92-40, Anchorage.
- Mills, M. J. 1993. Harvest, catch, and participation in Alaska sport fisheries during 1992. Alaska Department of Fish and Game, Fishery Data Series No. 93-40, Anchorage.
- Mills, M. J. 1994. Harvest, catch, and participation in Alaska sport fisheries during 1993. Alaska Department of Fish and Game, Fishery Data Series No. 94-28, Anchorage.
- Pahlke, K. A. 1997. Escapements of chinook salmon in Southeast Alaska and transboundary rivers in 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-33, Anchorage.
- Pahlke, K.A. and P. Etherton. 2001. Abundance and distribution of the chinook salmon escapement on the Alsek River, 2000. Alaska Department of Fish and Game, Fishery Data Series, No. 01-30, Anchorage.
- Schmidt, A. E. 1982. Inventory of high quality recreational fishing waters in Southeast Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Performance Report, 1981–1982, Project F-9-14, 23 (G-I-R).
- Schmidt, A. E. 1996. Interception of wild Salmon Lake coho salmon by hatchery supported fisheries. Alaska Department of Fish and Game, Fishery Data Series No. 96-26, Anchorage.
- Shaul, L. D., P. L. Gray, and J. F. Koerner. 1991. Coded wire tag estimates of abundance, harvest, and survival rates of selected coho salmon stocks in Southeast Alaska, 1981–1986. Alaska Department of Fish and Game, Fishery Research Bulletin No. 91-05.
- Suchanek, P. *Unpublished*. Management of sport harvests of chinook salmon in Southeast Alaska under abundance based treaty agreements. Located at: Alaska Department of Fish and Game, Division of Sport Fish, Juneau.

Suchanek, P. M., S. H. Hoffman, R. E. Chadwick, D. E. Beers, T. E. Brookover, M. W. Schwan, R. P. Ericksen, R. E. Johnson, B. J. Glynn, and R. W. Bentz. 2001a. Area management report for the sport fisheries of Southeast Alaska, 1998. Alaska Department of Fish and Game, Fishery Management Report No. 01-10, Anchorage.

Suchanek, P. M., S. H. Hoffman, R. E. Chadwick, D. E. Beers, T. E. Brookover, M. W. Schwan, R. P. Ericksen, R. E. Johnson, B. J. Glynn, and R. W. Bentz. 2001b. Area management report for the sport fisheries of Southeast Alaska, 1999. Alaska Department of Fish and Game, Fishery Management Report No. 01-11, Anchorage.

Taylor, S. G. and J. L. Lum. *Unpublished*. Annual report Auke Creek weir 2000, operations and fish counts. Located at: National Marine Fisheries Service, Auke Bay Laboratory, Juneau, Alaska.

Walker, R. J., C. Olnes, K. Sundet, A. L. Howe, and A. E. Bingham. *In prep*. Participation, catch, and harvest in Alaska sport fisheries during 2000. Alaska Department of Fish and Game, Fishery Data Series, Anchorage.